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OFFICE,

COLONIAL BUILDINGS—44A CANNON STREET, LONDON, E.C.

For particulars of subscriptions, advertisements, &c., see the centre of the book.



The Adulteration Bill has occupied considerable public attention during the month, and the moment has come when tradesmen should bestir themselves with their representatives in Parliament. The Government has conceded the principle, which, after all, is but bare justice, that innocent people should not be declared guilty; but Mr. Selator-Booth seems impressionable on this point, and willing to adapt his measure to the wishes of those who speak the loudest. At this moment the analysts are shouting very vigorously, and assuming, with ludicrous confidence, the rôle of protectors of the public. We trust that traders will show themselves thoroughly in earnest in their efforts to secure a Bill which shall punish fraud, *but fraud only*.

The Government Bill is to go into committee on Friday next. It has been ordered to be reprinted, but up to the time of going to press has not appeared in its revised form.

The Bill proposes to prohibit, under a penalty of 50*l*., the knowingly mixing any article of food with any ingredient or material injurious to health, with intent that the same may be sold in that state, or knowingly selling an article so mixed; and there is a like prohibition in respect to drugs; a second conviction is to be punished with imprisonment and hard labour. There is to be a penalty of 20*l*. for knowingly selling any article of food or any drug which is not of the nature, substance, and quality of the article demanded by the purchaser, except in the following cases—namely, where any matter is mixed therewith for the purpose of rendering it portable, or of preserving it; where a harmless ingredient is mixed with it for the purpose of rendering it palatable, or of improving its appearance; where, according to the usage of trade, it is sold in a mixed state; where it is the subject of a patent in force, and is supplied in the state required by the specification; where British, colonial, or foreign spirits are reduced from their ordinary strength by persons licensed and paying duties under the excise; where a drug is compounded either in conformity with a prescription of a registered medical practitioner or otherwise according to the usage of trade; and where the article is unavoidably mixed with some extraneous matter. But no person is to sell any article mixed for any of the purposes mentioned in these exceptions if the matter mixed be more than is ordinarily required for the purpose; and no person is to sell any article of food which by the usage of trade is sold in a mixed state unless the ingredients shall be mixed in the proportions required by such usage. But it will not be an offence to sell an article mixed with any ingredient not injurious to health if there be on such article a label stating that it is mixed. There is a penalty for knowingly abstracting from an article of food for sale any part of it so as to affect injuriously its quality, or selling the same so altered without making disclosure of the alteration. There is a penalty for refusing to sell to a public officer authorised to procure samples.

The bill provides that the Courts of Quarter Sessions and borough authorities may appoint public analysts. Any person having purchased an article with intent to have it analysed is to offer to the seller to divide it into three parts, one to be returned to the seller, one to be retained by the purchaser for future comparison, and the third may be submitted to the analyst. On prosecutions the defendant may tender himself or his wife to be examined on his behalf; and he is to be discharged from the prosecution if he prove that he sold the article in the state in which he purchased it, and that he bought it with a written warranty of its being the same article in nature, substance, and quality as that demanded of him. The Bill provides that tea imported shall be subjected to examination by Custom House inspectors, and that samples may be taken and analysed when deemed necessary; and powers are given for the protection of the public when the analysis is unfavourable.

Mr. Wigner, secretary to the Society of Public Analysts—and therefore, in some sense, their spokesman—read a Paper on the bill last Wednesday, to the Social Science Association, which we report. His assertions that tradesmen “had protested that adulteration was a good thing,” and such like, might serve for mere buffoonery, but are unworthy of any one pretending to argue the question. Mr. Wigner too would find it difficult to prove his assertion that “the Pharmaceutical Council were desirous to encourage adulteration.” At the same meeting Dr. Dupré asserted that adulteration was practised more among chemists than in any other trade except milk dealers. It matters little, perhaps, what Dr. Dupré asserts, but it may be remarked that, as analyst for Westminster, he has only once (so far as we remember) charged chemists with adulteration, and on that occasion he completely failed to justify his certificate. Mr. R. M. Holborn, the tea merchant, made a valiant stand for tradesmen in the discussion.

The Pharmaceutical Council meeting was held on the 3rd inst. The members were all present except Messrs. Bottle, Brown, Mackay, and Stoddart. Financial matters were first discussed. Mr. Williams presented the statement and explained that the Society had received 9,500*l*., all of which had been spent except 600*l*. Last year, as pointed out by Mr. Schacht, a sum of 2,500*l*. was invested in Government securities. The cost of examinations had increased by 450*l*.; the journal had improved a little in its financial results, but the Secretary considered that no large surplus could be reckoned on in future years. Several members suggested ways and means of meeting expenses, the Secretary considering that the examination fees would have to be raised, and Mr. Greenish desiring that unsuccessful candidates should sacrifice more than the one guinea, which was all that they lost by an abortive attempt to get through. An important discussion followed on the new Adulteration Bill. It was raised by Mr. Williams, who thought that the present bill was hardly likely to pass in its present form, and who expressed his opinion that it would be much better if some half-dozen laboratories were established in the country instead of appointing analysts in all boroughs and counties as now. Mr. Schacht regarded the present Act and the proposed one as specimens of the over-legislation from which the country was suffering. He considered that it was the public which was really responsible for adulteration, as, if purchasers would pay the proper price, they could get pure articles; therefore, he thought they were properly punished by being poisoned. Mr. Betty saw a good deal in Mr. Schacht's view, but it was outside the question for consideration. A bill is now being passed: it was for the Society to do the best that could be done to make it fair for the retailers. It was probable that the word “knowingly” could not be retained altogether, but he hoped the principle of prosecuting only the actually guilty parties would be maintained.

Mr. Frazer intimated that he would prefer the existing Act if its administration could be improved. Mr. Sutton suggested that some gentlemen from the Council should go with him and others from the Society of Public Analysts to an interview with Mr. Clare S. Read the next day on the subject of this bill. This was agreed to, and Mr. Hampson tried to pass a resolution urging on the Government that some provision should be made for ensuring the competence of all analysts. This was, however, objected to out of delicacy to the analysts, and was not carried. A resolution to transfer the management of the Preliminary Examination from the Society to the College of Preceptors was moved by Mr. Atherton, and seconded by Mr. Greenish. Mr. Schacht opposed it, as he failed to see what were the evils of the present system, or what advantage might be anticipated from the scheme proposed. Most of the members of Council, however, seemed favourable to the proposal, but further discussion was postponed till next month. It was arranged that application should again be made for the South Kensington Museum for the conversation in May next.

The Irish druggists seem still to halt betwixt two opinions—or rather, betwixt three or four. They coquet first with the Apothecaries' Company, then with the College of Physicians, and anon with the English Pharmaceutical Society. 'Lately,' in their perplexity, they have consulted Sir Dominic Corrigan, as if they did not know his opinion beforehand. That earnest gentleman warned them to keep out of the clutches of the perfidious Saxon, and to draw up a bill for themselves and leave it to the Government. The innocent trustfulness of this course is cheering, and we have no doubt that the Government will reciprocate by exercising the patience, hope, and resignation of these disciples, in addition to their faith.

The "Year-book of Pharmacy," for 1874, the publication of which has been delayed in consequence of the illness of its editor, Mr. Siebold, has at length appeared, and seems to win warm approval.

An important judgment concerning the right to a patent medicine title was given the other day by Vice-Chancellor Hall, in the case of Smith's Pectorine, a report of which will be found in our "Legal" columns.

This month we conclude our report of Dr. Richardson's lectures on alcohol; and we strongly recommend the perusal of this article to all chemists. The physiological effects of the drug are narrated with scientific precision as well as with vivid force.

A dreadful case of arsenic poisoning has occurred in Surrey. A Mr. Chandler purchased 10 lbs. of arsenic from Mr. Griffiths, chemist, of Farnham, for the purpose of sheep dipping, and mixing some of it with flour, placed the mixture in the pantry in order to kill vermin. His daughter, mistaking that for flour, used it for making a pudding. Mr. Chandler and his wife and eldest son all died in consequence. After an inquest, the Coroner said the occurrence was evidently an accident, and due to the carelessness of the man Chandler himself. He was strongly of opinion that there should be some alteration in the Act regulating the sale of arsenic, and that such large quantities should not be sold without being coloured. He believed some colouring could be used without rendering the arsenic useless for sheep dipping and other purposes for which it was necessary, which would prevent it being mistaken for flour. The jury returned a verdict of "Accidental death," with a recommendation that means should be adopted for the colouring of all arsenic in future.

The Sheffield Pharmaceutical and Chemical Association had a dinner on the 17th ult., the President, Mr. G. A. Cubley, in the chair. Mr. H. W. Maleham was elected President for the ensuing year.

The Norwich chemists held a well attended dinner on Feb. 18. Mr. Corder presided, and among the toasts of the evening was the health of the late President, Mr. Nuthall, who was leaving Norwich. Mr. Nuthall had been one of the most energetic members in the formation and conduct of the Norwich Chemists Association.

Mr. Nathaniel Jacobson, of London, and Mr. John Palk, of Exeter, both widely known as chemists' valuers, are among those whose names occur in our obituary.

MR. C. SARG.

THE manufactory of Sarg's Glycerine, at Liesing, near Vienna, is one of the best-known chemical works on the European Continent, and the reputation and sale of the product has so widely extended in this country within the past few years that a few notes respecting the history of the business, with a portrait of the present principal, may not be unacceptable to our readers.

The firm is known in Germany as the Milly-Kerzen Fabrik, or the Milly Candle Factory. It was established in 1838 by M. de Milly, a Frenchman, for the production of stearine candles, but in 1858 the property was put up for sale by auction, in consequence of a long course of bad management, and Mr. F. A. Sarg became the purchaser. Mr. Sarg had made his fortune in Frankfort-on-the-Maine, partly as a wine merchant and partly as proprietor of an hotel in that city, well known to English travellers, the Hotel de Russie. He had retired to a country farm, in the neighbourhood of Frankfort, but unlike Diocletian, had found himself unable to secure content and rest in the contemplation of his cabbage, so he started off in quest of a new life of activity, and found it, as we have intimated, in the Vienna candle factory.

About that time the attention of scientific men was directed to glycerine, and the value of the glycerine-water occurring in the candle manufactory, and which, until then, had been treated as worthless waste, was beginning to be recognised. Mr. Sarg saw the importance of the opportunity, and quickly took advantage of it. His son, Mr. Carl Sarg, had been studying in Belgium, and at 19 years of age had passed the State examination as an engineer. He now turned his attention to chemistry, and studied the science under Liebig. After travelling in England, France, America, and other countries, Mr. Carl Sarg returned to Vienna and commenced to develop the manufacture with which his name is now so intimately associated. Price's Candle Company were then the only distillers of glycerine, and Mr. Sarg is ever ready to acknowledge the courtesy and willingness with which the principals of that great business enabled him to study on the spot the processes adopted by themselves. The trade was big enough and promising enough to exclude any idea of jealousy, and the competition between the rival firms has since been conducted as honourably as it was commenced.

For the Vienna Exhibition of 1873, Mr. Sarg constructed a most imposing stearine statue, surmounted by a bust of M. de Milly, the founder of his firm, and with several figures surrounding the central column. Around this trophy were placed several vases containing specimens of crystallised glycerine, which, heretofore unknown, considerably attracted the attention of chemists. We published a sketch of this structure in our issue for October, 1873, and in previous issues a Viennese correspondent had described the manufacture of glycerine as conducted at Messrs. Sarg's establishment. It was then stated that no less than 10,000 cwts. was the annual production in these works alone.

Last year Mr. Sarg commenced the manufacture of artificial butter from fresh beef-fat, and succeeded in producing an imitation of the natural substance as perfect as could be desired. Another factory for the preparation of artificial wax was also commenced, this being produced from a sort of ozokerit found in Galicia. With all these works to manage, with an office to superintend in Vienna, and with agencies in the chief cities of the world, it is evident that Mr. Sarg must be pretty well occupied: he is, however, one of these men whose activity will always outrun their engagements, and while he retains the management of his works there is no fear that the sale or character of his various productions will diminish.

THE CHEMIST AND DRUGGIST PORTRAIT GALLERY.

XIV.



Frederick Whist
Carl Sarg

MR. C. SARG.

THE CHEMIST AND DRUGGIST

THE CHEMIST AND DRUGGIST



MARCH 15, 1875

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CONDUCTED BY RICHARD J. MOSS, F.C.S.

THE next analysis will be of the same nature as the last. One of the alkaloids—morphia, quinia, cinchonia, brucia, strychnia, or a salt of one of these, may be present in the sugar which we intend to distribute for examination. The alkaloids only are to be sought for; it will not be necessary to make any examination for the acidulous radical which may be present.

Students who wish to compete should send us their names and addresses before the 20th inst. On the 25th the samples will be forwarded.

Students' papers will be received up to April 15.

ANSWERS.

The sugar distributed for examination in January was mixed with 2 per cent. of *Quintia Sulphas*, B. P. It is satisfactory to be able to state that all the papers received record correct results, with only two exceptions. Correct results, however, although the principal thing to be considered in judging the merits of a chemical analysis, must not be too highly valued. It happens that success is sometimes as accidental as failure. Curiously enough, several students have shown quinia to be present, notwithstanding the erroneous impression that only alkaloids in the free state might be present. Of course the possibility of salts of the alkaloids being present makes a great difference [in] the method of analysis. Water, for example, might be used to separate the sugar from any of the five alkaloids without dissolving more than mere traces of them. But only two of these alkaloids—cinchonia and quinia—yield salts not readily soluble in water. So that if salts of either brucia, strychnia, or morphia had been present, no residue would have been left after treating the substance with water; and to those who suspected only the presence of free alkaloids, this would have been strong evidence in favour of the absence of these bodies.

The necessity for finding the alkaloid or its salts in a state of comparative purity is not sufficiently recognised by our contributors. There appears to be a general impression that sugar is an inert substance, incapable of interfering with chemical reactions. Or else that the analytical tests described in text books are so peculiarly characteristic that they distinguish the substances referred to from everything else. Some such delusion has given rise to errors when sulphuric acid is employed as a reagent in the presence of sugar. This acid gives such a marked colouration with sugar that the latter has been recommended as a test for free sulphuric acid. It is clear that for this reason sugar must be removed before sulphuric acid can be satisfactorily applied as a test for alkaloids. Indeed a very small quantity of sugar would entirely mask the colour reactions of sulphuric acid with some of the alkaloids.

PRIZES.

The 1st Prize has been awarded to THOMAS TAMB (T. T.), Market Place, Trowbridge.

The 2nd Prize has been awarded to F. E. TWENLOW, 12 George Street, W.

Marks Awarded for Analyses.

T. T. (1st prize)	95
F. E. Twenlow (2nd prize)	94
M. M. Bird	92
D. L.	92
Non Nullus	90
Gemma	89
W. A. B.	88
Waverley	85
F. W.	85
A. P. Green	85
Entlar	82
Nemo, Belfast	82
H. C. Corko	82
H. J. Jackson	80
Nemo, Sunderland	80
Junius	80
G. B. Whelpston	78
J. A. Hallhead	75
Alpha	75
F. L.	30
B.	25
Latus	0
Junio	0

TO CORRESPONDENTS.

* * All Communications should include the names and addresses of the writers.

Prizes.—The students to whom prizes are awarded are requested to write at once to the publisher, naming the book they select, and stating how they wish it forwarded.

Any scientific book that is published at a price not greatly exceeding half-a-guinea may be taken as a first prize.

Any scientific book which is sold for about five shillings may be taken as a second prize.

Gemma.—You evidently thought that only free alkaloids could be present; but for this misunderstanding your paper was very good.

W. A. B.—We are pleased to hear that the "Corner for Students" has been of such service to you.

Waverley.—Your analysis was good, but your table of the solubility of the alkaloids and their salts requires revision; there are several errors in it. The careful compilation of such a table would be well worth undertaking. Of course it should be based upon actual experiment, and ought to be quantitative. The terms soluble and insoluble are seldom capable of being used in an absolute sense.

Entlar.—The use of amyl alcohol was quite unnecessary in this case; for with water alone it was possible to separate the alkaloid in a state of sufficient purity. A very small quantity of the substance sufficed to show the insolubility of a portion of it in cold water, and thus to indicate the course which should be followed.

Nemo (Belfast).—The possibility of salts of the alkaloids being present does not appear to have occurred to you. It was fortunate for you that the salt present was nearly insoluble in water.

H. C. Corko.—All the tests upon which you relied were made in the presence of sugar, and you do not appear to have made any experiments for the purpose of learning how sugar behaved with the reagents employed.

Junius.—The basis of the mixture was cane sugar, not grape sugar as you state.

G. B. Whelpston.—You confine yourself to the description of reactions, leaving us to reason from the data. We expect you to perform the latter operation; it is not the least important part of the work.

J. A. Hallhead.—Very good for a first attempt. The insolubility of a portion of the substance in water escaped your notice. You must not think that a fact apparently so trifling is not worthy of attention.

Alpha.—Tests of solubility require to be performed with care, and taken alone they seldom afford conclusive evidence. Morphia is not quite insoluble in ether, so that the solubility of a precipitate in ether is poor proof of the absence of this alkaloid.

F. L.—Sulphuric acid decomposes sugar, with the production of a colour varying from a yellowish tinge to black. The intensity of the colour depends principally upon the quantity of water present. You could not expect to detect quinia in the presence of sugar by means of the colour which it produces with sulphuric acid.

B.—Your examination of the substance was very superficial. The correct result was a mere accident, for the salt present was sparingly soluble in ether, not being the uncombined alkaloid as you supposed.

Latus.—The harmony of your errors is remarkable. Almost every observation that you describe was entirely erroneous. It is evident that you have not taken the trouble to make yourself practically acquainted with the reactions of the alkaloids.

Junio.—Your failure with the chlorine test may be due to your chlorine water being old. This reagent soon becomes unfit for use if exposed to light.

DR. RICHARDSON'S CANTOR LECTURES ON ALCOHOL.

(Concluding Notice.)

ENTERING as we do now on the influence of common or ethylic alcohol on animal life, we would bespeak attention to the gravity of the subject, and the solemnity of the issues that are involved. The one point this moment under discussion is its mere physical action on the body. The sum of 117,000,000. of money is invested in this country in alcohol as a commercial substance. Where does it go, and for what is it good? Waiving all moral considerations, it is for us, not as physicians, but as physicists, to know what it does. Alcohol will enter the body many ways, by injection, by inhalation, and by the stomach; but whatever be the means of introduction, it passes into the blood. Previous to absorption by the stomach it has to undergo proper dilution with water, for alcohol, when separated by an animal membrane from a watery fluid like the blood, will not pass through the membrane until it has become charged to a given point of dilution with water.

In this way it is removed from the stomach into the circulating blood when it has been swallowed. The central organ of circulation is the heart, having the right auricle and ventricle on the right, and the left auricle and ventricle on the left. Alcohol entering the veins makes its way through the right heart, through the lungs, through the left heart, and through the body at large by the arteries. As it passes through the circulation of the lungs some of it is thrown off in expiration. Leaving the arterial circuit, it passes into what is called the minute circulation, or the structural circulation, of the organism; on its route alcohol finds its way to every organ, to the brain, the muscles, the secreting and excreting organs, nay, even into the bony structure itself, and it moves with the blood. When the dose of alcohol is large, the blood, though containing 790 parts of water in 1,000, is affected. The alcohol diffused through this water comes in contact with the fibrin, with the albumen, with the salts, with the fatty matters, and, lastly, with the red blood corpuscles. These red corpuscles are the vital instruments of the circulation. With every part with which alcohol comes in contact, a disturbing action is produced, and chiefly on these corpuscles: their function of absorbing and fixing gases is impaired, and sometimes they aggregate in masses. Alcohol may fix the water with the fibrin and thus destroy the power of coagulation; or it may extract the water so determinately as to produce coagulation. Man has two nervous systems—the primary nervous chain, common to the lower animals, and the added centres of the brain and spinal column, with their fibres. The first governs the involuntary motions, and its centres are the seats of those faculties which we call emotional and instinctive. The centres of the brain and spinal chord are the seats of the volitional and reasoning powers, which are directly under the influence of the will. Now all the minute blood vessels at the extremities of the circulation are under the control of the primary or organic nervous supply. "Branches of nerves from those organic centres accompany every arterial vessel throughout the body to its termination, and without direction from us will regulate the contraction and dilatation of the blood vessels to their most refined distribution." Simple physical impressions may have a disturbing influence, as shown in the blush or pallor of the cheek: intense cold by ether evaporation will induce paralysis, and the amyl nitrite will paralyse the vessels of the minute circulation. The whole series of the nitrites possess this power, as well as ether, and alcohol also, which is the main important fact, has the self-same power.

Other organs are affected in a strange manner: the first that feels the disturbance is the heart. The details would be sensational were they not founded on strict physiological investigation. When the heart beats, each stroke is modified and kept in order by the resistance offered by the vessels: when their nervous supply is perfect, the tension and time is regulated. When the vessels are relaxed, the resistance is removed; the heart beats more quickly, more frequently, and with a weakened recoil stroke—and so the mechanism of the great human chronometer is deranged. How fearfully the clock is damaged, let Dr. Parkes, of Netley, and the late Count Wollowicz relate; then let the moralist take up his parable—he will not intensify the situation.

These experimenters ascertained that the average number of

beats of the heart in 24 hours during the first or water period, when no spirit was imbibed, was 106,000; in the alcoholic period, 127,000; in the brandy period, 131,000. These were the eventual average results obtained from eight observations, operating upon the young and healthy adult man. Let us write the table thus:—

Average beats of the heart in 24 hours		Brandy	106,000
Under the influence of	Alcohol	131,000	
	Water	127,000	
		21,000	25,000 number in excess

The highest of the daily means of the pulse during the eight days of the water period was 77.5 beats; the next highest was 77. Comparing the mean of this one day, viz., 77 beats per minute, with the alcohol days, we find:—

		Times more	
On the 9th day, with one fluid ounce of alcohol, the heart beat	480		
On the 10th day, with two fluid ounces	1,872		
On the 11th day, with four fluid ounces	12,960		
Lastly, on the 14th day, with eight fluid ounces	25,458		

The first day of alcohol gave an excess of 4 per cent., and the last of 23 per cent.; the heart, therefore, during the concluding alcohol stages was doing one-fifth more work. The heart, however primarily excited, soon begins to flag, and more stimulus is necessary to carry on the work. Organs other than the heart are implicated.

It cannot be too well known, or too strongly remembered, that the flush on the cheek during the first stage of alcoholic excitement is the condition universal to the body. The vessels of the lungs are injected, as also the brain and spinal chord; and there is vascular enlargement in the stomach, the liver, the spleen, the kidneys, or any other vascular organs. An unhappy individual in a paroxysm of alcoholic phrensy had his brains dashed out by the wheel of a railway carriage. The brain, entire, was examined three minutes after death. It exhaled the odour of spirit; its membranes and minute structure were vascular in the extreme. "It looked as if it had been injected with vermilion." The white matter of the cerebrum could scarcely be distinguished, and the pia mater, the internal vascular membrane covering the brain, resembled a delicate web of coagulated red blood. We must add this dismal chapter of physiology read by the author with unfeigned calmness. The function of the spinal chord is influenced by the continued use of alcohol. This is the seat of automatic mechanical acts, and these pure automatic acts cease, under the influence of alcohol, to be carried on, the nervous control of certain of the muscles is lost, and the nervous stimulus is enfeebled.

Then come in swift succession the impaired condition of the brain centres, and the will and judgment suffer shipwreck; the rational part of man abdicates, the emotional or organic reigns. Happy is it for the inebriate that the brain fails before the heart, which to the last remains faithful to its duty. When once the circulation dies, the tragedy is finished.

We have learnt at last (once wrote Augustus Sala) that alcohol is a food; physiology, no less than analogy (says, in effect, Dr. Richardson), points out the intensity of this delusion. Yet, as in the heart of every man there exists the feeling that alcohol, spite of its abuses, may possess a direct power of sustenance, we are invited to consider dispassionately, and in the light of science, "Is Alcohol Food?" We have seen its physical action on the animal body, and that over the nervous system and the vascular supply this spirit exercises a specific influence. Is there, beyond, a sustaining, constructing, or heat-giving power? Can it contribute force? Men and animals have certain means of living; man as a thinking being holds a distinct place in nature, and his condition must first be ascertained. Taking the word *dust* to mean and to include the actual compound substance of the earth, no stricter theory can be given of its primeval origin, for in the earth are found not only all the elements of which he is constructed, but some existing in the same kind of combination. Moreover, this *justissima* yields to man spontaneously from herself or from the vegetable kingdom all the requirements for his existence.

Leading, as we do, an artificial mode of life, we interpret as a necessity that to which habit has trained us to resort. Nature has produced two essential fluids, and two only, for man to drink. The first is water, and the second milk.

Descending to the lower class of living beings, there is before us the grand experiment that no other fluids are required but those just named. Animals perform laborious tasks, endure fatigue and vicissitudes of heat and cold for successive years

with solid food, and without the aid of fluids other than Nature has provided. Whole races of mankind may be quoted as illustrations of the same striking fact.

Turning to physiology, we see nothing that would lead us to suppose that a necessity existed for the use of any fluid beyond that which nature has supplied. The mass of the blood, of the nervous system, as well as of all the vital organs, is made up of water. The secretions are watery fluids, and the introduction of any other liquid agent is sufficient to create functional disturbance. Alcohol, then, in any disguise, is something superadded to the necessities of life, and under no other pretext than as a luxury has it been offered by the hand of hospitality.

May not, however, alcohol be useful as a supplement, and is there a sense in which it may be accepted as performing any other part in the body, save that physical part which has already been submitted to our consideration?

Food may be defined as that which helps to maintain the living animal body in perfect order of construction, and enables it to move of its own mere will and motion. Foods are divisible into two great classes—those which supply material or tissue, and those which supply heat or other variety of force. The building foods are nitrogenous; the force-supplying foods are hydrocarbons. This theory, though undergoing modification, for all practical purposes may be retained. Nitrogenous foods exist in the form of jelly-like substances or colloidal matter. This is found in the blood as fibrin, and in the motor muscles. Albumen is a colloid in a fluid state, and permanently fluid at the temperature of the living body. The organic matter of the skeleton, of the cartilages, of the sheaths of muscles, and of the tendons, is formed of two colloidal substances—gelatin and chondrin. Nay, more, it may be said that all the active masses of structure are nitrogenous and colloidal. In combination with this active matter are water and saline substances; and it is on its combination with water that the colloidal activity depends. On the saline substances rest the various kinds of combination of the colloid with the water. Another animal product is fat, a substance detrimental in excess, yet capable of combustion and yielding heat. These are the building materials of the body; all, save water, salts, and fat, being nitrogenous. The vegetable kingdom is their source; they are not made by any natural process within the animal. They are beyond the art of the chemist to reproduce, and therefore can be derived only from one natural supply.

"Alcohol," continues Dr. Richardson, "contains no nitrogen. It has none of the qualities of these structure-building foods; it is incapable of being transferred into any of them. It is, therefore, not a food in the sense of its being a constructive agent in the building up of the body."

On the other hand, the formation of fat is still a disputed point. Ale and beer fatten; animals are fattened by a mixture of barley flour and gin. This fattening may be due to the sugar or starchy matter taken with the alcohol, and experience proves that spirit taken unmixed has a tendency to fatten neither animals nor men. Alcohol, when largely imbibed, induces a desire for physical repose, under which condition there is an interference with the ordinary nutritive processes, and there is set up a series of changes, which lead, independently of the alcohol, to the development of fatty tissue. We understand the transformation of starchy matter into sugar, and we infer that in the animal body sugar is transmutable into fat. We know, also, that sugar may be converted into alcohol, but as yet we cannot trace back the alcohol into sugar. Physiology seems, however, to connect the transference from alcohol into fat, of which the signs are manifest in fatty degeneracy; but there is no direct evidence to establish the effect and cause. Fatty change of tissue may indeed progress when alcohol is absent in the tissues of those who abstain from it altogether. Alcohol, then, it may be affirmed, does not build up the active nitrogenous structures; nor does it produce fatty matter save by an indirect and injurious interference with the natural processes. If alcohol be not a substance out of which are formed the tissues, may it not supply the power of doing work? Before our inquiries can be satisfied, there is a difficult path to travel, one on which it would be vain to venture without serious thought. Alcohol will oxidise in two ways: with the production of much heat and with formation of carbonic acid and water; secondly, with the production of aldehyd and acetic acid. What are the chemical changes alcohol undergoes when carried into the blood by the minute circulation? It has been contended that alcohol taken into the body is consumed there with

the evolution of heat, but it was doubted afterwards whether alcohol was disposed of in the organism by its combustion. In 1860 three Frenchmen, Lallemand, Ferrin, and Duroy, published a prize essay on the subject. They concluded that alcohol accumulates in the tissues, and is eliminated by the fluid secretions, unchanged, as alcohol. They found no secondary oxidation products, excepting acetic acid, in the stomach. Dr. Anstie, supported by Schulzins, Drs. Thudicum and Dupré, upset this theory. They proved that the alcohol eliminated is the merest fraction of what has been injected. The colour-test was employed, formed of potassium bichromate and sulphuric acid.

To this was added by Dupré a standard, solution of soda, to estimate the amount of acetic acid which would be produced by the oxidation of alcohol were that fluid present. It was discovered that from the secretions of persons who drink no alcohol at all a fluid can be obtained answering to these tests; also that from animals under alcohol, all the secretions put together yielded no more than a fractional amount of the alcohol that had been administered. Clearly, the alcohol is decomposed in some way; but has it undergone combustion? If there be heat, and if there be product of carbon consumed in oxygen, then alcohol must rank as a heat-forming food.

Here we may abandon theory and popular ideas for the results of actual observation.

There are four stages of alcoholic excitement. In the first stage the external temperature of the body is raised: The internal temperature declines. In the second stage, the temperature first comes down to its natural standard, and then declines; in the third stage the fall of temperature is rapid; and in the fourth stage dangerous. This is the distinguishing point between drunkenness and apoplexy. In apoplexy the temperature is above, in drunkenness below, the natural standard.

Through every stage the special action of the poison is reduction of the animal heat. Two warm-blooded animals were placed in a chamber, the air of which was reduced in temperature 10° below freezing point: one in the third state of alcoholisation slept to die; the other, apart from the influence of alcohol, placed in a warmer atmosphere, recovered. As there is a decrease in temperature from alcohol, so there is a proportionate decrease in the amount of the natural product of the combustion of the body. In one experiment the amount of carbonic acid exhaled was reduced one-third below the natural standard, and this class of observation has been confirmed by Dr. Edward Smith, and placed beyond dispute.

Let us sum up the points of this supremely difficult question, and draw the logical inference.

We remark, with extreme deference, that this portion of the argument was not clear during the delivery of the lecture, and, owing to the mechanical arrangement of the sections it came out still less clearly in the printed report. Whilst we apologise, therefore, for some recapitulation, we will endeavour to show distinctly what the Doctor meant to say.

Here is alcohol, a body with which we are chemically acquainted. We know from laboratory experiments that it will burn, and give the usual products of combustion. We observe in it the phenomena of both active and slow combustion. As this alcohol gains an entrance into the system, passing through the channel of the blood, it is a fair and legitimate idea, if not a conclusion, that as undoubtedly it is decomposed, it may be so according to the combustion theory, and, therefore, be ranked among the heat-forming processes, and thus be called a food.

It remains, then, for us to know in what way alcohol is disposed of in the organism. The earlier physiologists made sure that it was consumed with the evolution of heat. But three Frenchmen, already mentioned, maintained that it was eliminated as unchanged alcohol, in which view the combustion theory was untenable. Drs. Anstie, Thudicum, and others, reconsidered these assertions, and they found that the quantity so eliminated bore no proportion to the amount injected. They proved their point by colour tests and other reliable modes of investigation. They took a terrier dog, for example, weighing 10 lbs., which could take with comparative impunity nearly 2,000 grains of absolute alcohol in ten days: on the last day of this régime, he only eliminated by all the channels 1·13 grain of alcohol.

Other experiments yet more striking were conducted, and the results pointed in the same direction. Again, therefore, we are brought back to the original theory of combustion, the more so as present physiological knowledge does not permit us to

say definitely what is the exact nature of the decomposition which alcohol undergoes when internally administered. But physiology plainly teaches one indisputable fact, that whatever may be the change, alcohol acts directly in antagonism to a heat-producing substance. Outside the body it will burn, and it does give heat: not so great as that obtained by an equal weight of hydrogen, nor an equal weight of carbon, but greater than that caused by the combustion of phosphorus, and much greater than that caused by the combustion of sulphur. Inside the body it does no such thing—it acts in a diametrically opposite manner. The whole process of alcoholic disease is one of chill—the remedy is to restore lost warmth. Not only is the temperature reduced, but the combustion products are diminished, and the quantity of carbonic acid exhaled by the breath is proportionately decreased with the decline of the animal heat. It follows, then, “that alcohol is not burned after the manner of a food which supports animal combustion; but that it is decomposed into secondary products by oxidation at the expense of the oxygen which ought to be applied for the natural heating of the body.”

Rapidly must be passed over the supposed effect of alcohol in stimulating muscular power. We must distinguish between that and nervous excitement—the latter is often increased, the former weakened. Animals subjected to alcoholic influence become distressing evidence of the loss of muscular force. We may, therefore, draw the following conclusions:—

1. The popular idea of administering alcohol for the purpose of sustaining animal warmth is an entire and dangerous error, doubly dangerous in cold weather.
2. Warmth is the first, best remedy in case of intoxication.
3. The systematic administration of alcohol in order to give or to sustain strength is an entire delusion.
4. The belief that alcohol may be used to fatten the body, when it is acted upon, fraught with danger.

And in conclusion, alcohol, at its best, is but a luxury, and the unwary or the sensuous who are snared by its fascinations must accept the consequences.

Another branch of the subject, the adulteration of alcoholic drinks, will, perhaps, be of more general interest than the foregoing physiological researches, particularly when we find it stated that the characters of pure ethylic wine are at present hardly known. If alcohol be a necessity, it has abundantly kept up its reputation of the “mother of invention.” A *bona fide* grape wine cannot contain more than 17 per cent. of alcohol; yet our table wines are brought up in sherries to 20 per cent., in ports to 25 per cent.

Some wines and spirits are charged with amylic alcohol—the bouquet is not unfrequently a foreign substance; whilst effervescing wines are undergoing the fermenting process at the time they are being drunk.

Absinthe, a continental importation, is the king of poisonous compounds. In this liquor, five drachms of the essence of absinthium are added to one hundred quarts of alcohol: we have thus a concentrated spirituous agent. In the case of dogs and rabbits, doses of absinthe of from thirty to fifty grains produce signs of terror and trembling, followed by stupor and insensibility. In larger doses there are epileptiform convulsions, foaming of the mouth, and stertorous breathing. In man, the same epileptic seizure is induced. Its effects resemble those of the narcotic of the East—the Homeric nepenthe. Partial insensibility is attended with the ideal existence of long intervals of time: dire hallucinations follow, and intellectual weakness. Death ensues these phenomena. There is, moreover, excited a morbid craving after food, which renders its influence the more seductive. Permanent dyspepsia is its inevitable accompaniment, and we may agree with Dr. Decaisne in asserting that its use should be legally forbidden in all civilised communities, and that the “liver-corroding tipple,” as it has been designated, should be exiled by the strong hand of authority.

The intentional addition of poisonous agents to alcohol is no special invention of these modern times; the practice was known to the Greeks and Romans. It prevailed during the Middle Ages, and was often forbidden by statutory enactment. In the year 1705 John Jacob Ernh, of Estingen, put litharge into wine, and was beheaded. Duke Everhard Louis of Wurtemberg made the addition of bismuth, sulphur, or this salt of lead, an act punishable with death and confiscation.

The adulterants of ale are salt, sugar, and water, and a sweet substance called *saccharina*, made by the action of dilute

sulphuric acid on starchy matter. Neumann, a century ago, mentions clary, cocculus indicus, and Bohemian rosemary. Strychnine has been suspected; but as far as numerous researches are concerned, no such foreign bodies have been detected, nor is there evidence, physiological or otherwise, to confirm the prevalent idea respecting cocculus indicus. Wine that has ceased to ferment is often as injurious as beer in which the fermentation has not ended; acid wine, which has been neutralised by lime, is open to the objection of excess of the lime salts; beaded wines, and those containing amylic alcohol, are to be avoided. An acid wine is not necessarily injurious, but the acid, the tannin principle and saline constituents which wines contain, may be administered without the aid of alcohol. Aldehyd is the substance from which the natural bouquet is derived, and has been shown by the late Sir James Simpson to be an anesthetic. It is a rapidly intoxicating agent, boils at 72° F. = 22° C.; is quickly diffused and quickly eliminated from the body, its precise action has not yet been determined.

Ales and wines may be drank with tolerable impunity when compared with spirits. Of these, rum and whisky are less falsified, and brandy least. But what shall we say of gin, the people's favourite beverage? Shall we cite Cyrus Redding, or quote the pharmacopoeia of the publican, styled the “New Mixing and Reducing Book?” Gin has to be made cordial, to be sweetened, to be rendered smooth and creamy, to be flavoured, to bite the palate and to have a beard. To do this it stands in need of oil of juniper, essence of bitter almonds, oil of coriander, and oil of caraway. Sweeten it with oil of vitriol, spirit of wine, loaf sugar, and further admixture of the above; render it creamy with sugar, garlic, Canadian balsam, and Strasburg turpentine; make it piquant with shreds of horseradish, and biting with caustic potash, and then it is something like. But the beard is wanting. Let it be bearded without fail, and this formula will have the desired effect:—

R. Ol. Amygd. dulc., ℥j.

Acid. sulphur., ℥j.

Loaf sugar, ℥ij.

M. fiat paste.

Dissolve in Spirit of Wine, and add to one hundred gallons.

Sweetened gin may be diluted safely down to 35 or 40 per cent. U. P.; but should the publican have overshot the dilution mark, he may bring up the compound by a second formula. For 100 gallons, one ounce of cassia, half an ounce of chilies, and one pint of spirit macerate for a week, and mix. Should we remember that the whole precious beverage were to share the fate of that herd of swine that ran violently down a steep place, and perished in the sea.

Let us now resume the study of the action of ethylic alcohol free from these contaminations, as shewn in secondary, or, as it is called, chronic intoxication. A minority of men escape, being either so cautious, or physically so well constituted. The majority must suffer, from known and inevitable reasons. Some, as a rule, do not exceed four or six ounces of alcohol a day; but continued use brings on the sense of acquired necessity, and creates desire, until the spirit is a positive requirement of the organic and the mental life. The young betray least signs of physical deterioration; but when the body is fully developed the disastrous change begins: the fluid is retained longer in the living house, is decomposed less quickly, and eliminated with less speed. The first action of the alcohol is mechanical; the vessels throughout the body are dilated, and the whole of the marvellous network of the blood deranged. The function of the heart, an automatic organ, becomes perverted, attains undue size and power; and in proportion as this evil is increased the necessity for the stimulus grows more urgent. Not only is the heart enlarged, but its valvular and other mechanical parts, subjected to undue strain, are thrown out of proportion. The orifices are dilated, the valves are stretched, the filamentous cords elongated, and the ventricular walls hypertrophied. At one moment the vital organs are conscious of a too powerful stroke of blood, at another of a too feeble action, and the brain consequently is endangered. These changes in mechanical arrangement lead to deterioration of the organic structures by destroying the integrity of the colloidal tissues: all parts share in this disturbance, for the ultimate structure of which they are composed must be held in proper measure of construction with water. The colloidal matter is injuriously affected, a fact proved by infinite experiment: alcohol, and aldehyd its derivative, destroy the integrity of this colloidal matter. The parts which suffer most from alcohol at first are those expan-

sions in the animal body which anatomists call the membranes; they are colloidal and almost omnipresent. The skin is a membranous envelope; the peritoneum is the lining membrane of the intestines. The muscles, brain and spinal chord, the eyeball, and the minute structures of the vital organs are enclosed in membranous matter. Through these membranes nothing can pass that is not for the time in a state of aqueous solution like water or soluble salts, solid food being subject to this law. If these membranes are too porous the body dies as if it were slowly bled to death; if thickened, the natural fluids fail to pass. On all these membranous structures alcohol exerts a vitiating influence; they thicken, shrink, and become inactive.

Of external and eruptive alterations we need say nothing. Nor yet of flatulence, dyspepsia, and the like. Pause here for a moment and reflect on this catalogue of evils physical and structural: they are minor when compared with those which remain to be enumerated. An old, old physiologist, King Solomon, has left this faithful diagnosis: "Who hath wore? who hath contentions? who hath babbling? who hath wounds without cause? who hath redness of the eyes?" The latest writer of the nineteenth century could not better have summarised the disease. The sad conclusion remains yet to be described: it is the statement of the influence of alcohol on the vital organs, and the mental phenomena induced. Who has not witnessed, many a time and oft, the truth of the following sentence? "The emotional centres are alternately raised and depressed in function by the poison; but after a time the depression overcomes the exhilaration, and the impulse is to a maddening sentimentality, extending even to tears." Poor would be the daily returns of the pharmacist were pills and potions meant to combat alcoholic dyspepsia excluded from his retail trade, and were the long train of anodynes no longer needed to alleviate alcoholic insomnia. Yet, while in such cases relief can be afforded, the special structural deteriorations of the liver, the kidneys, and the lungs, are at once the fortune of the physician and his despair. We must leave, as entirely medical, the sketch of alcoholic phthisis, or the consumption of drunkards, nor is it of paramount necessity to encumber the pages of this journal with its lugubrious signs. What remains? Organic nervous lesions—epilepsy, paralysis, and insanity. What remains? The loss of memory and speech, the *mania à potu*, an intermittent madness for strong drink, and the one curable form of alcoholic disease called dipsomania, which, happily for the world, does not bid defiance to the healing art. A solemn reflection should be suggested to every man, that not one transmitted wrong, physical or mental, is more surely transmitted to unborn generations than the ills wrought by alcohol. Let Dr. Richardson conclude his own argument in the words addressed to the members of the Society of Arts. "If this agent do really for the moment cheer the weary, and impart a flush of transient pleasure to the unwearied who crave for mirth, its influence (doubtful even in these modest and moderate degrees) is an infinitesimal advantage by the side of an infinity of evil for which there is no compensation and no human cure."

ANALYSTS VERSUS TRADESMEN.

At a meeting of the National Association for the Promotion of Social Science, held on Wednesday evening, the 10th inst., Dr. Cameron, M.P., in the chair, a Paper was read by Mr. G. T. Wigner, one of the secretaries of the Society of Public Analysts, "On Adulteration and Adulteration Acts, with special reference to the Sale of Food and Drugs Bill, 1875."

The lecturer, after tracing the history of adulteration and the legislation concerning it from the time of Henry III., came to Dr. Hassall's investigations of some twenty years ago. Of the many hundreds of samples of food and drink tested by Dr. Hassall at that time, something like 65 per cent. were more or less grossly adulterated. Mr. Wanklyn, about the same period, had investigated milk, and had found adulteration to be the rule. These disclosures brought about the Act of 1860, but it was not very vigorously enforced, and only about 300 samples were analysed in all. So for twelve years the adulterators had it pretty much their own way. They became more expert at their work, and from time to time devised improved methods of "committing the oldest crimes the newest kind of ways;" and

when at length, in 1872, the evil had become too glaring, and the public patience again gave way, they resented with virtuous indignation any interference with their time-honoured "usages of the trade," and immediately the last Bill was passed they discovered that they were the victims of oppression and injustice. That this Act had been productive of much good was evidenced by the outcry which the tradesmen had made against it.

It is noticeable (continued the lecturer) that in the majority of cases of "hardship," "oppression," &c., the defence has not been that a man was punished for selling as impure an article that was really pure, but that he bought it in the same condition as he sold it, and this is a point which I contend should never be admitted as a sufficient excuse.

The object of an Adulteration Act is, or ought to be, to protect the public. The wholesale and the retail dealer should be left to make what arrangements they please between themselves, but the public should not suffer; and if a shopkeeper is so ignorant as not to know whether he is selling adulterated or unadulterated articles, the sooner he selects some humbler occupation which he does understand the better.

But the tradesmen, after these many years of immunity, had "waxed fat," and become a great power in the country. They had their advocates in the Press, and their representatives in Parliament, and with a dogged determination worthy of a better cause, they resolved to "die hard." They protested that adulteration was in itself a good thing, that their fathers and their grandfathers had practised it, and that they were all "most respectable men." They maintained that they knew better than their customers did what their customers really wanted; that when a man asked for "tea" he would be disappointed if he did not have it heavily "faced;" that if he asked for "coffee" it was only his ignorance which prompted him to use such a word, for what he really required was a totally different substance, known to the "trade" as "chicory;" that when he asked for "mustard" he didn't mean mustard, but a mixture in about equal quantities of mustard and flour, delicately tinted with turmeric; that bread minus alum was unsightly, if not unwholesome; and that undiluted milk was not suitable to the English palate.

As to the gentlemen who had accepted appointments as "Public Analysts," they mocked at their science and derided their ability, and this to such good effect that it became the exception to find the word "Analyst" in some newspapers without the flattering prefix of "incompetent."

The upshot of this long and loud "cry of the oppressed" was the appointment of the Select Committee which sat last year. Of this committee I would speak with the utmost respect, composed as it was of honourable and high-minded gentlemen, and if it was tainted with a leaning to the side of the tradesmen rather than to that of the public, perhaps the same objection might be made to the composition of the House of Commons itself. This committee applied itself to its task with admirable industry. They heard the opinions of numerous tradesmen, and the evidence of two or three analysts, and ultimately they issued a report, in which they admitted that they had come to the conclusion that the Act of 1872 had "done much good," but at the same time they considered that there had been some cases of hardship, and so they thought some alteration in the law should be made. They had not, however, before them any tabulated or authentic returns of the actual results of the working of the Act, but these results I have (acting on behalf of the Society of Public Analysts) within the last few days got together and collated, and they are as follows:—

Returns have been received from 60 districts, showing during an average period of 16 months the number of samples analysed, and the proportion found to be adulterated.

Total number of samples analysed, 14,383; total number found to be adulterated, 3,774; being about 26 per cent. of the whole. Of the 3,774 adulterated, 1,066 were samples of milk.

Mr. Wigner then went on to show, chiefly from his own experience, how considerably the proportion of adulterated samples had fallen off since the Act had been in operation.

The next part of his address was devoted to a consideration of the Bill now before Parliament. Having summarised its most important clauses, the lecturer proceeded to prove that under this Bill any possible means of adulteration might be practised with impunity.

Clause 4, he said, provides that "no person shall knowingly

mix, colour, &c., any article, &c., with any ingredient of a nature injurious to health."

First of all, this clause does not mean what it says. It clearly means that the penalty shall be incurred for "rendering an article as sold *injurious to health*," as there are innumerable substances used, and fairly used, in the manufacture of articles of food which, if eaten or drunk by themselves, would be not only "injurious to health," but actually poisonous. Take, for instance, yeast in bread and essence of bitter almonds in confectionery. However, leaving this, and taking the evident meaning of the clause, we come to this word "*knowingly*," which occurs also in clauses 5, 6, and 9.

A man must add these forbidden ingredients *knowing* them to be injurious to health; but how if he doesn't know or professes not to know? or if he does know how is his knowledge of their effect to be proved? "Ignorance will certainly be bliss," for whenever action is taken against a man, he has only to plead that he *didn't know any better*. Surely this is setting a premium on ignorance, and the intelligent and honest trader will stand at a great disadvantage as against his ignorant or unscrupulous brother.

Clause 6 says that a man shall not "*knowingly*" sell "an article not of the nature, substance, and quality of the article demanded," but here again he has only got to stick to ignorance and he is safe; but suppose he admits that he does know that when he has been asked for one article he has supplied another, he still runs a very small risk of being punished, for he can plead that the adulterant has been added for the purpose of rendering the article "palatable" or of "improving its appearance," and what is palatable and what is pretty being purely matters of opinion, the vendor will have a right to urge that *this* is of as much value as that of the opposite side, and the addition of alum to bread does certainly improve its appearance. But as if this poor innocent tradesman were not sufficiently guarded from the possibility of a conviction, he is allowed also to urge that the adulterated article is mixed "in accordance with the usage of trade." This is exemplifying the maxim that "whatever is, is right" with a vengeance. He has only got to show that his neighbours are as guilty as himself to prove that he is not guilty at all. If it is the practice in a certain district (as it has been in some districts) to add 50 per cent. of water to milk, this "usage of trade" is to receive legislative approval. He can also successfully plead several other "exceptions," but it is hardly worth mentioning them, as if those I have alluded to are allowed to stand, it matters little what is added to them, but I may mention that under the first exception of clause 6, salt or carbonate of soda might be added to milk to the injury of young and delicate children. But if by any extraordinary perversion of justice, or if because the trader is too ignorant to avail himself of any of these "exceptions" so kindly provided for him, he should run the risk of being convicted, clause 8 steps in and takes care of him. It says in effect:—

"So long as you do not poison your customers, in case we have not made the 'exceptions' elastic enough for you, you are hereby authorised to adulterate your wares with whatever substances and to whatever extent you think fit, if you take care to affix or hand a label stating that the article is 'mixed'—the sort of label, the size of the type, and whether to be fixed inside or outside of the parcel, and all such little details being left to your own discretion."

The intention of this clause is, I am free to admit, very praiseworthy, and I think that, if it were enacted, the label should be printed in distinct and legible type, and that it should state the minimum proportion of the substance under the name of which the article was sold, it might work well; for instance, it should not be allowable for a man to sell simply "a mixture of chicory and coffee," but the label should state that "this is sold as a mixture of chicory and coffee, and contains more than (so much) per cent. of coffee," so that the purchaser may know whether he is buying 25 per cent. of chicory and 75 per cent. of coffee, or *vice versa*.

In the sixth exception under clause 6, it is enacted that a drug may be sold not "of the nature, substance, and quality" of that asked for if sold according "to the usage of trade." As it is manifestly extremely desirable that drugs should be sold in a pure state, it would be much better to say, "or in accordance with the standard laid down by the British Pharmacopoeia or by approved works of *matéria medica*."

Other criticisms on the many details of the Bill followed. Respecting clause 25, Mr. Wigner said this clause seeks to pro-

tect the retail tradesman from being deceived by the wholesale dealer from whom he buys, and says that if he can produce a "warranty" from the latter he shall be acquitted. The intention of this is admirable, but there is a large loophole. The retailer goes free on production of a warranty of the purity of an article which has been found to be adulterated, but no provision whatever is made for touching the wholesale man who gave the false warranty. Unless this be altered, so that in cases of the sale of adulterated articles the law may lay hold of somebody, it is not difficult to foresee that there will be a great number of warranties soon affixed; and it is equally clear that, except for the purpose of furthering adulteration, they will not be worth the paper on which they are written.

Mr. Wigner concluded by expressing his opinion that the Bill, as it now stands in its entirety, is a retrograde Bill, and if passed would tend to the encouragement, not to the repression, of adulteration.

Mr. R. M. HOLBORN, of the firm of Holborn & Sons, Mincing Lane, tea merchants, commenced the discussion. He said that he and his firm had had considerable experience in the working of the Adulteration Act. He had seen in various parts of the country poor little tradesmen who did not know they had done anything wrong dragged up before the police courts in batches, sometimes thirty at a time, and convicted like poachers or felons. The essay which had just been read was the most modest production that he had yet heard from the analyst's standpoint. He had heard something very different from this at Sheffield a year or two ago. But the fair tone adopted by the lecturer encouraged those who did not quite agree with him to discuss the subject. Mr. Wigner had referred in his Paper to Dr. Hassall as a pre-eminent authority. Immediately after, he had named Mr. Wanklyn in similar terms. Now before the Committee of the House of Commons Mr. Wanklyn had asserted that he could prepare a sample of common fair, and he would undertake that Dr. Hassall should mistake it for better. Of these very eminent authorities, therefore, he (the speaker) would be glad to know whose certificate it would be just or safe to consult upon. The essay had passed somewhat lightly and superficially over the cases of hardship which had been referred to in the Committee's report. There had been multitudes of cases, and some of them deserved a stronger word than hardship. Take a specimen. It was a case that occurred at Axbridge. A small grocer was summoned for selling impure tea. He challenged the analyst's certificate, and asked that a portion of the condemned tea might be sent for examination to some independent authority in London, and to the disgrace of English justice, four magistrates sitting in a row refused that application and convicted him. Take another case, which occurred in London. This was a very small grocer who was charged with selling impure tea. The charge was denied. Mr. Douglas Strang for the defence, demanded that the analyst should be put into the box to be cross-examined, and also demanded a portion of the sample which had been examined. The prosecution promised that both points should be granted, and the case was adjourned. At the second hearing they failed to fulfil either of their promises, and the Court adjourned the case again, meanwhile ordering an independent analysis by Dr. Stevenson. These chemists did not support the certificate of the prosecution, on the part of the public analyst, and by Prof. Dugald Campbell and Mr. Harkness for the defence, but at the third hearing of the case Mr. Poland appeared for the authorities to ask permission to withdraw from the prosecution. It cost that little tradesman 68s. to prove the purity of his 16d. black tea. This case came before the Committee of the House of Commons, and it was proposed to insert words in the report commenting on the penalties attaching to proved innocence, but the proposal was voted out by 7 voices to 6. There was the case of Kelly, of Liverpool, too, whose butter was bandied about from Liverpool to London, then back to Liverpool, then on to Glasgow, and at last declared to be sound, and Mr. Kelly had to pay 500*l.* to get at the result. Great objection was made to this word "knowingly." Well, let us have even-handed justice, and if ignorance is to be punished on the part of the defendant, let it also be punished when the condemnation on the other side of the cases made mistakes. *Actus non facit reum nisi mens sit rea* was one of the maxims of Roman law, and the principle had always been at the foundation of English justice also. Mr. Holborn concluded by remarking on the system of terrorism which had been introduced in reference to most articles of food and drink, and as an illustration he handed to the chairman "a copy of a pious publication, edited by one of Her Majesty's chaplains," in which lurid accounts of the dangers of tea had been published, with drawings of microscopic investigations.

Mr. SEWELL WHITE urged that the question was whether this Bill was not calculated to neutralise the good which the Act of 1872 had unquestionably effected. He said it was not the duty of the Government to see that the public got value for their money, but it was their duty to take care that the health of consumers was not injured by one article being sold for another. As to the cases of hardship to which allusion had been made, they were incidental to every law. Any innocent man was liable to be tried for any possible offence and put to serious expense and trouble, and

though his innocence might be ultimately proved there was no redress for him unless he could show that the prosecution had been prompted by malicious motives.

Dr. Muter was asked to say a word or two in reply to Mr. Holborn on behalf of the unfortunate public analysts. To abuse the plaintiff's attorney was the usual custom of a defendant when he had a bad case, and he supposed that this might account for some of the abuse heaped on the analysts. It should be remembered that the analysts had no control over the prosecutions. If a prosecution failed, it might often be from no mistake of the analyst. He (Dr. Muter) was the analyst referred to by Mr. Holborn in the London tea case, and he was glad to be present in order to reply to what had been said in that affair. The case was one of the first, if not the first, tried under the Act in London. There had been no experience of its working, and the case failed because it was brought under the wrong section of the Act. What he (Dr. Muter) had found in the tea was husks and hairs, and much like impurities. This was stated in his certificate, and he was told by the legal adviser to the vestry to state that these were added to increase the weight and bulk. Dr. Stevenson found the same things in the tea as he (Dr. Muter) had found; but he did not consider they were added to increase the weight or bulk. With this opinion before him Mr. Poland advised the Vestry that the case ought to be withdrawn under that particular section, but that they might bring it under another section. He (the speaker) had analysed nearly 1,700 cases under the Act, and no other case which had been prosecuted had failed. Dr. Muter also urged the appointment of analysts under Government, and the practical examination of all analysts previous to appointment.

Mr. HELM (Dunn & Hewitt's), Dr. BANTLEY, and Dr. DUFFRE continued the discussion. The last named speaker took occasion to refer to a statement in the *Pharmaceutical Journal* to the effect that one of the chief objects of the Pharmaceutical Society from its commencement had been to secure greater purity in drugs. "If this were so," said Dr. Dupré, "all I can say is that the Society has lamentably failed in its efforts; for, with the exception of the milk trade, I know of no class who have practised adulteration to such an extent as pharmaceutical chemists."

Mr. HENNESSY AMES followed, and reminded Dr. Dupré of his failure to establish proof of adulteration in a certain spirit of ultra case; but the analyst vigorously maintained that there had been no error on his part.

Mr. WIGNON made a brief reply, in which he said he was glad to take the first public opportunity that presented itself to deny what had been stated, that he had invited the Council of the Pharmaceutical Society to accompany him on a deputation to the Local Government Board. He said he would not go with that Council, for they wanted to encourage adulteration, and he wanted to discourage it.

The CHAIRMAN spoke briefly, and the meeting closed with a vote of thanks to him and to the lecturer.

PHARMACEUTICAL RED TAPE IN PARIS.

IN a recent "conference" the spiritual poet, *chroniqueur*, journalist, and *gourmand*, Charles Monselet, gave a short sketch entitled "Chez un Pharmacien," which contains so many good points and hits that we permit a translation.

**

MY DEAR NEIGHBOUR,—I saw you to-day entering the shop of a *pharmacien*; at first this gave me some uneasiness, for your cheerful air and light step re-assured me, and I supposed you were only going to purchase some agreeable sirop or a few perfumed pastilles.

The Pharmacy G— does not see every day such light-hearted customers as yourself, dear neighbour. Sometimes there pass within its precincts painful scenes, one of which I witnessed the other day, and which I will now relate to you.

**

The Pharmacy G— is one of the handsomest in Paris. In the first place it is situated in a central quarter, that is to say, in proximity to the greater part of the accidents.

The shop is large and airy, its windows are adorned with curiously shaped bottles filled with variously coloured spirits, the interior is decorated with unadorned good taste, there are urns wherein serpents are coiled, dark green busts of Esculapius and Galen, and copper sphinx support the counters, while high up is inscribed the word "Laboratory."

**

I can never explain it to myself, but pharmacies have always a fascination for me, possessing, as they do, a methodical aspect and an exceptional atmosphere.

From the powders, minerals, roots, plants, herbs, dried flowers, the unguents, pâtes, elixirs, there exhales an odour singularly pleasing to me, and amidst which I fancy I should like to live.

All at once, while I was examining all those jars, so alike in appearance and so diverse in contents, a woman pushed open the door of the shop violently and entered. She had hardly strength enough left to speak; her countenance was convulsed; she could only hand to the pharmacist a prescription which she held, clutched in her trembling fingers.

Her husband had just received a fearful wound in the head; he is now lying on his bed unconscious. The doctor, called in haste, had written rapidly a few lines upon the paper she brought. It is these few lines that she has passed to the pharmacist, who is calmly and gravely unfolding them, for a pharmacist should never cease to be grave. He is slowly deciphering the writing, for a pharmacist should, before all, make himself well acquainted with the details of a prescription. When he has finished reading it, he says to the woman:—

"Be good enough to take a seat. Sit down! sit down!"

"But, Sir," she cried, "do you not understand that my husband is in the greatest danger? Give me quickly what is required!"

"It will only take an instant: please to sit down."

The poor woman sinks into a chair, her arms hanging listlessly on each side, and her face expressionless from anxiety and fatigue.

During this time the pharmacist sets to work.

He takes a small vial, places it in the beautiful scales before him. He goes to a row of the jars arranged like books in a library. He pours from one a few drops into the small vial. He then weighs it, and adds more from another jar. All this with the care and system recommended by the "Codex."

From time to time the woman jumps from her seat suddenly. Her husband, pale and covered with blood, haunts her, and she turns to the pharmacist, and joining her hands in supplication, she says:—

"Oh! Sir! Sir!"

"Patience!"

"My poor husband!"

"It will soon be ready, Madam."

Saying this, the pharmacist corks hermetically the little vial, which is at last full; he takes from a drawer a piece of green paper, with which he covers the cork, arranging its folds with a tedious neatness and regularity; he ties it with a bit of red twine, and trims the paper with a pair of scissors; then he plunges a stick of sealing-wax in the gas jet, and deposits upon the summit a lighted drop, in which he affixes the ends of the twine.

"Oh! Sir! Sir!"

Our pharmacist has not yet finished; he has now to find a label and paste it upon the bottle, then to write in a plain hand the number of the prescription, the name of the mixture, whether for internal or external use, and not forgetting the hackneyed phrase "shake before using."

"Sir! Sir!"

"It is finished, Madam."

In point of fact, after having accomplished all these indispensable formalities, the pharmacist rolls up the vial in an elegant quality of paper, and presents it to the woman.

"How much? how much?" stammers she, feeling for the money in the pocket of her dress.

"Pay at the desk."

At the desk sits enthroned the proprietor of the pharmacy, with a majestic air, dreamily perusing the latest livraison of pharmaceutical literature; he detains the poor woman several minutes more, and at last she receives her change; then she precipitates herself towards the door, when she encounters again the clerk, who politely opens it for her, in the midst of a deafening rattling of the bell attached thereto.

*

Such is the scene, dear neighbour, which I accidentally witnessed the other day. May heaven preserve you from ever going to procure anything else in the Pharmacy G— than an agreeable sirop or some perfumed pastilles.

WE HAVE RECEIVED a sample of lavender water from Messrs. Foulger & Son, of George Street, London, which is well deserving of recommendation for its rich distinctive lavender perfume.

Abstracts of Foreign Papers.

THE PURITY OF CHLOROFORM.*

The substitution of grain spirit for pure spirit of wine appears to be the principal cause of the bad quality of certain commercial chloroforms. M. Rump has had the opportunity of rectifying large quantities of chloroform from various sources; one sample came from a manufactory in Saxony, another, in very good condition, from a dépôt established during the war of 1870. This chloroform was submitted to fractional distillation, and each tenth part separated. The last pound collected boiled between 72° and 82° C. The distillation afforded the following remarks. As the temperature reached 57° bubbles of steam rose, and, condensing, the neck of the retort bedewed. M. Rump attributes these traces of water to the steam of water evolved by the chloroform. The liquid commenced boiling between 59° and 59.5°; the product ($D=1.480$ to 1.481) was shaken with water, to free it from alcohol, then dehydrated by chloride of calcium. After this treatment the product appeared pure; density, 1.499. When the boiling point reached 60° the receiver was changed, and the temperature rose slowly to 60.75°. The fractionation of the products gave perfectly pure chloroform, boiling at 60.5°, under a pressure of 760 millimetres. Further distillation separated products boiling between 61° and 62°, which consisted mainly of impurities. Their odour suggested amylic and butyric compounds, and recalled the smell perceived when chlorine or chloride of lime acts on animal substances. One sample of commercial chloroform, origin unknown, submitted to the same treatment, gave an odour of acetic ether. No sort of solid chlorine compound could be obtained from any of these products. The dense liquids arising from these different chloroforms were distilled over alcoholic potash. There was effervescence, and the density of the products rose to 1.51, and the boiling point to 70°. A very small quantity of alcohol sensibly lowered the boiling point. Mr. Schacht has proved the stability of pure chloroform *in vacuo*, even when exposed to sunlight. But under ordinary conditions the air has a manifest influence on chloroform; moisture renders its decomposition possible even in the dark. Chlor-oxy-carbonic gas is one of the products of distillation. M. Rump considers water to be the most active agent in the decomposition of chloroform. The alcohol contained in nearly all commercial chloroforms opposes this destructive action of water. He recommends that chloroform should be kept in glass bottles perfectly dry and clean. Chloroform containing $\frac{1}{3}$ per cent. of alcohol, and kept in the sun for two weeks, was less affected than some containing $\frac{1}{2}$ to $\frac{3}{4}$ per cent. of alcohol. The addition of $\frac{1}{3}$ per cent. of alcohol to chloroform lowered its density 0.002. Chloroform which has suffered decomposition rapidly decolorises sunflower paper: this is, therefore, a good test of its condition. In evaporating pure chloroform by heat, from a one per cent. solution of nitrate of silver the latter remains clear; if impure, it becomes more or less turbid, from formation of chloride of silver. The unpleasantly smelling products which impair the quality of chloroform and raise its boiling point, originate in the bodies foreign to pure alcohol produced by the distillation of grain. These facilitate the decomposition of chloroform, and cause the cough which troubles those who work with it. The rule should be to employ no alcohol charged with amylic bodies.

CRYSTALLINE COMBINATION OF CONINE WITH IODINE.

By M. BAUER.†

To obtain this substance the author adds an alcoholic solution of iodine to a similar solution of conine, drop by drop, taking care that the conine remains in excess. At first the iodine causes turbidity, which soon disappears. The mixture being evaporated by a gentle heat, a yellow residue remains, with an odour of conine, very soluble in water, alcohol, ether, or chloroform, but insoluble in benzene, and very slightly soluble in carbon disulphide. This residue dissolved in water, and left at rest in the presence of chloride of calcium, slowly deposited octahedral crystals, rather large, of a light yellow colour, and smelling of conine. By dissolving the crystals in ether, and

evaporating the solution, they can be obtained in radiating needles. Nitrate of silver readily decomposes this compound, a circumstance which allows of the estimation of the iodine in the crystals air-dried. The decomposition effected in a closed glass tube, in presence of nitrate of silver and nitric acid, gave a mean of 57.37 per cent. of iodine, and 42.63 of conine. Five estimations of the iodine, the results of which were almost identical, accord with the formula $3(C^{10}H^{15}N)3HI$. This combination of iodine with conine will be, therefore, an hydriodate of ter-iodo-conine.

ON THE PREPARATION OF SULPHOVINATE OF SODA.*

M. Dubois proposes to substitute for the present process of manufacture of sulphovinate of soda one or other of the following methods. They are based on the great solubility of this salt in alcohol, sulphate of soda being insoluble.

First Process.—After having prepared the sulphovinic acid in the usual way, M. Dubois makes a concentrated solution of caustic soda in alcohol of 96°, with which he saturates the sulphovinic and sulphuric acids, taking the following precautions:—1. The receiver in which the mixture is made is kept at a low temperature by a stream of cold water, or by a freezing mixture. 2. The alkaline liquid is added in small quantities. The filtered liquid is distilled on a water-bath, to recover the alcohol. The residue is evaporated on a water-bath, until a pellicle forms on the surface, and is then allowed to crystallise in a cool place. The crystals are put to drain in a funnel, and then dried in a stove. They are pure and white.

Second Process.—After having prepared the sulphovinic acid, and allowed the liquid to cool, it is diluted with alcohol of 96°. It is immediately saturated with powdered carbonate of sodium. The whole is then thrown on a filter, and the sulphate of soda washed with a little alcohol to remove the last traces of sulphovinate of soda; the liquid is distilled, then evaporated in a water-bath, and left to crystallise. The crystals are purified, if necessary, by re-crystallisation.

M. Dubois has observed with reference to the preparation of sulphovinic acid that the yield of sulphovinate was almost the same whether the temperature were raised or lowered.

COMMERCIAL EFFERVESCENT CITRATE OF MAGNESIA.†

There is met with in English commerce a product which is sold under the name of "effervescent citrate of magnesia." This salt is granulated and very light; it dissolves rapidly in water with escape of carbonic acid gas; the taste is by no means disagreeable, and in doses of from 30 to 50 grammes it has the effect of an ordinary purgative. This so-called "effervescent citrate of magnesia" contains neither citric acid nor magnesia; it is nothing but tartrate of soda with an excess of tartaric acid, and bicarbonate of soda added to produce effervescence. The preparation of granulated tartrate of soda is very simple. It can be made in the following manner:—

1.—Powdered tartaric acid	750 grammes.
Bicarbonate of soda, powdered	380 "
Distilled water	390 "

The acid and the bicarbonate of soda are mixed in a porcelain dish; the distilled water is added by degrees, care being taken to stir it with a glass rod or wooden spoon. The whole is quickly thrown on a sieve, which is carried to a stove. Under the influence of heat, the mass swells and granulates; after desiccation, it is sifted to obtain a uniform and strongly acid product.

2.—Tartaric acid	400 grammes.
Bicarbonate of soda	750 "
Distilled water	280 "

Proceed in the same manner as for No. 1. The salt thus obtained contains an excess of bicarbonate of soda, and mixed with product No. 1, it gives exactly the English effervescent citrate.

ON THE PREPARATION OF CRYSTALLINE FORMIC ACID.‡

M. Berthelot has succeeded by a simple method in preparing C^2HPO_4 , so as to render it completely free from the sulphurous product with which it has hitherto been more or less contaminated. The general process now in use is to decompose formiate of lead by means of sulphuretted hydrogen, the salt

* Journ. de Pharm. et de Chimie, from Archiv. de Pharm., October 1874, p. 313.

† Journ. de Pharm. et de Chimie, from Archiv. de Pharm., September 1874, p. 214.

* Journ. de Pharm. et de Chimie, Jan. 1875, p. 44.

† Journ. de Pharm. et de Chimie.

‡ Ibid., p. 115.

being placed in a long tube heated with charcoal. M. Berthelot proceeds by completely desiccating the formate of lead, and then decomposing it by sulphuretted hydrogen in an oil bath, at a temperature not exceeding 130°. The salt is placed in a large U tube, the exit end of which is drawn out and bent to an angle; once isolated, it is rectified, fractionated, and then crystallised in a freezing mixture. The acid, purified by repeated crystallisations, melts at + 8.6°, a higher temperature than any hitherto remarked.

ON ATTEMPTS TO ACCLIMATE CINCHONA TREES IN REUNION ISLAND.*

Dr. Vinson says the first seeds sent by MM. Decaisne et Morin were sown near the coast, and then transplanted to heights of from 700 to 800 metres. Their present condition is extremely promising. One slip, from amongst the first plants, has in four years become a tree of six metres in height. The cinchonas thus obtained have flowered, seeded, and produced bark. Dr. Vinson has projected a large plantation, which comprises at the present time more than 300 trees, of which number the half are not less than nine metres high. The samples of bark from young trees, not yet fully grown, have yielded 14.3 of quinine, and 0.5 of cinchonine per 1,000 parts.

PILLS OF IODISED ALBUMEN.

M. Collas has successfully employed albumen as a vehicle for the administration of iodine. By this means the irritant action of the iodine is avoided, and a definite amount readily administered. It is prepared by briskly agitating a solution of albumen with iodine, either in very fine powder, or dissolved in some appropriate liquid. The mixture, at first of a deep brown colour, becomes colourless after some hours contact, and does not give a violet colour with starch. The product is then dried with a gentle heat, on a stove, and immediately made into pills. Each pill should contain five milligrammes of iodine. According to M. Dolbeau, iodine thus prepared is innocuous, and free from the many inconveniences usually consequent on its administration. Five or six pills may be taken daily in cases of glandular swellings and chronic ostitis.

POWDER FOR RICKETS.

M. BOUCHUT.

Phosphate of lime	4 grammes.
Carbonate of soda	8 "
Sugar of milk	12 "

Mix. Three pinches to be given to ricketty children with each meal. Cod-liver oil; saline and aromatic baths; friction to the skin, with a flannel impregnated with aromatic vapours.

ANTIGASTRALGIC DROPS.

M. NIEMEYER.

Tincture of nux vomica	4 grammes.
Tincture of castoreum	4 "

Mix. Two drops to be taken during the spasm, in half a cupful of infusion of valerian. Hot applications to the pit of the stomach.

PRESENCE OF FUCHSIN IN WINE.

M. Shuttleworth (G.B.), having examined some samples of port wine which were artificially coloured with fuchsin, says that the method giving the best results consists in shaking in a tube a certain quantity of the suspected wine with amylac alcohol, and then allowing the two liquids to separate. If the wine be pure, the upper layer is colourless, or very slightly coloured; whilst if fuchsin be present, it is rose-coloured or purple. Ether may be used in place of amylac alcohol, but this does not give such good results.

REACTION OF NARCEINE.

If chlorine water be poured on narceine placed in a watch-glass, and some drops of ammonia be added, the whole being mixed, a deep blood-red colour is soon produced, which is not affected by heat or an excess of ammonia. Any other alkali may be substituted for ammonia.

THE CHEMICAL SOCIETY.

Thursday, February 18, 1875.

PROFESSOR ODLING, F.R.S., in the Chair.

After the minutes of the previous meeting had been read, Professor Clerk Maxwell delivered his lecture "On the Dynamical Evidence of the Molecular Constitution of Bodies." The lecturer, after some preliminary remarks, proceeded to discuss the dynamical method of studying a system of molecules, with especial reference to that elaborated by Clausius, showing how it would explain the variations from Boyle's law observed in dense gases. He then deduced from the kinetic theory that the number of molecules in a unit of volume of two gases must be the same, which coincides with Gay-Lussac's law of equivalent volumes. The difficulties which at present beset the atomic structure of the molecule were then stated, as also those connected with the transparency of gases and their electric phenomena. After a vote of thanks to the lecturer, the meeting was adjourned.

Thursday, March 4, 1875.

PROFESSOR ODLING, F.R.S., in the chair.

The usual business of the Society having been transacted, a Paper on "The Dissociation of Nitric Acid," by Messrs. P. Braham and J. W. Gatehouse, was read by the former, and an experiment performed showing the action which takes place. Dr. Thudicum then addressed the meeting "On the Chemical Constitution of the Brain," exhibiting a large number of the products obtained from that organ. There were also Papers on "Calcic Hypochlorite from Bleaching Powder," by Mr. C. T. Kingzett, and "On a Simple Method of Determining Iron," by Mr. W. Noel Hartley. The meeting was finally adjourned until Thursday, March 18, when Dr. Hofmann will deliver the Faraday lecture at the Royal Institution "On Liebig's Contributions to Experimental Chemistry."

THE ADULTERATION OF MILK.

A PAPER was read at the last evening meeting of the Pharmaceutical Society "On the Estimation of Fat in Milk," by Mr. Edward Lawrance Cleaver. That Paper, taken in connection with the remarks subsequently made by Professor Redwood, gives a fairly complete account of the modern methods of estimating the integrity of milk. We therefore print both.

Mr. CLEAVER said the method of milk analysis now generally adopted by analysts for determining whether milk has been adulterated by the admixture of water is based on the fact that the amount of "solid matter not fat" in milk is very constant, and therefore all samples of milk in which the "solid matter not fat" falls below a recognised standard are to be considered as admixed with water, regard, of course, being paid to the total solid matter in the case of milks exceptionally rich in fat.

The determination, therefore, whether milk has or has not been adulterated with water depends mainly on the accuracy with which the fat has been estimated, and the object of this Paper is to compare the processes now in use for that purpose, to point out their defects, and to provide a means by which those defects may be greatly, if not entirely, remedied.

The processes in general use are as follow:—

1. A large quantity of milk, say 1,000 grains, is evaporated to dryness with constant stirring, in order to prevent the residues from adhering to the sides, and to obtain them in a granular condition. These residues are then transferred to an apparatus similar to that used for the estimation of oil in cake, meal, &c., and the operation is conducted in the usual manner. This process is amongst the most accurate, but the time occupied in its performance constitutes a great objection.

2. A smaller quantity than the preceding, say 200 grains, is evaporated to dryness as above, weighed, and the residue macerated with cold ether; this ether is then poured off, evaporated to dryness, and the resulting fat weighed, or the fat is calculated from the loss in weight sustained by the solid matter. The objections to this process are numerous. Firstly, the fat cannot be extracted from milk solids by cold ether, especially when

they are in the hard granular condition produced by evaporation to complete dryness. Secondly, the ether, unless filtered, will hold in suspension innumerable fine particles of the solid matter, and although the ether may appear perfectly clear when poured off, yet, on being left at rest a short time, a deposit will be found upon the bottom of the containing vessel. Thirdly, on drying the residues the ether mechanically enclosed causes them to dehydrate and fly about. The evaporation of the ether is also worthy of some attention, for when ether is evaporated over a water-bath the ether is almost certain to enter into ebullition, and the bubbles of vapour in escaping carry off with them a large quantity of the fat.

3. The milk is evaporated to a pasty condition and treated with warm ether, the ether poured off, evaporated to dryness, and the resulting fat weighed. This method is open to the same objections as the preceding.

4. The method proposed by Mr. Horsley, of Cheltenham, is the next I have to consider. It is based on the principle that the butter fat can be dissolved out from milk by agitation with ether, and can be set free from solution by the addition of alcohol; its volume is then ascertained, and the weight calculated from that volume. There are, however, some objections to this method. 1st. The precipitate caused by the addition of the alcohol forms a mass which encloses the fat mechanically within it, and therefore prevents it from rising to the surface. 2nd. If the temperature be low, the globules of fat solidify, and these solid particles do not rise so readily as when liquid, and the fat takes some hours to completely rise to the top of the liquid. These two difficulties can be, however, overcome by adding 5 or 6 drops of a 10 per cent. solution of caustic soda to the milk before agitation, and after the alcohol has been added placing the tube in warm water in order to keep the fat in a liquid condition.

When making use of this method at first, I found that I always obtained a higher percentage of fat than by other plans, and thinking, therefore, that the instrument might have been improperly graduated, I proceeded to ascertain if that was the case. I found that when a known amount of pure dry butter was placed in one of these tubes, and the operation performed as with milk, the volume of fat set free exactly corresponded with the weight added, but that if, when operating on milk, the fat was removed from the tube by a pipette, and estimated by evaporation and weighing, I never obtained the quantity indicated by the volume; and I am, therefore, led to the conclusion that, although the instrument has been graduated correctly when butter has been taken as the standard, yet, owing to the condition in which the fat in milk is (namely, that of an emulsion), a larger quantity of ether is retained by the fat, and consequently the amount indicated is too high; each division, in fact, should correspond to 3.8 grains, by weight, of fat, instead of 4.15 grains. Further experiments on this point are, however, perhaps desirable. The points I have established during my experiments on the above processes are as follow:—

1. Cold ether will not dissolve out the entire amount of fat from dry milk residues.
2. Boiling ether will not dissolve out the entire amount of fat from milk residues when in a pasty condition.
3. The residues should be in a state of fine powder, and must be boiled three or four times with successive portions of ether in order to thoroughly extract the fat; the ether being always passed through a small filter before evaporating.
4. During evaporation care should be taken not to allow the ether to enter into ebullition.

Bearing these points in mind, I have endeavoured to devise a process in which the loss of fat is reduced to a minimum. It is as follows:—Ten grammes of milk, or 10 cub. cent., are put into a small dish and evaporated to complete dryness, constantly stirring towards the end of the process with a glass rod enlarged at the end so as to break up all small lumps, to obtain the residues in a fine powder. The residues are then transferred to a long narrow tube; one of Mr. Horsley's tubes answering well for the purpose. The dish is then rinsed with ether, and the ether added to the residues in the tube.

A piece of damp cloth is held round the top of the tube, the mouth being closed by the thumb of the operator. On immersing the tube in a water-bath the ether begins to boil, and the pressure can be so regulated by the thumb of the operator that the ether may be kept in gentle ebullition, although at a temperature considerably above its boiling point. The ether is then poured off through a filter, and the operation repeated several times, not less than four, as I have frequently, in the

fourth treatment, obtained as much as one-eighth part of the whole quantity of fat previously extracted. The filter is then washed with a small quantity of ether, and the evaporation proceeded with. This I effect by directing on to the surface a current of air from a bellows or foot blower, either warm or cold, completing the operation by a few minutes over a water-bath. Two fluid ounces of ether can easily, by this means, be evaporated off in ten minutes without any fear of loss by ebullition. By this method I am enabled to extract from 5 to 1 per cent. more fat than by other methods; and, in fact, to nearly approach the amount shown by Mr. Horsley's lactometer; and it will, in practice, be found to be very little more trouble than the ordinary methods, whilst on the score of accuracy it leaves but little to be desired.

Professor Redwood said that he could not agree with Mr. Cleaver in all points, but it was nevertheless very interesting to hear the results which were obtained by different operators. As far as his experience went there was no kind of analysis in which public analysts agreed so nearly in their results as in the analysis of milk. Nearly all public analysts now adopted one common method, which was very nearly that which had been indicated in the Paper. The process known as Mr. Horsley's method—which had been adopted many years before in France—was adopted by very few analysts. The process generally used was essentially that which Mr. Wanklyn had described and adopted. It was the same as Mr. Wanklyn's in principle, but a little different in the mode of separating the fatty matter. Mr. Wanklyn recommended a certain amount of milk to be evaporated to dryness in a platinum dish. The solid residue adhered to the dish and formed a solid cake. He then added ether, and boiled the ether in it. Then he turned the mixture into a filter, and evaporated away the ether, and estimated the fat that was left. That was Mr. Wanklyn's mode. He (Professor Redwood) did not adopt it in all its details. Instead of using a platinum dish he preferred a hemispherical German porcelain dish, because he could easily separate everything which adhered to such dishes; and by careful manipulation towards the latter part of the process the whole of the solid residue was brought into a perfectly fine granular condition. Every dish had its weight marked on the outside, and that weight did not vary to the extent of one-hundredth of a grain, even after five or six months' daily use, if the dish was perfectly glazed inside and out. The residue was next exhausted with ether, the ether being added in three or four successive portions. Upon the ether being added, the dish was placed upon the water-bath, but they carefully avoided boiling it, for the reason to which Mr. Cleaver had alluded, which was that the liquid was apt to spirt, and thus cause a loss. Each dish was furnished with a little glass rod, which was rounded at each end, and the whole contents of the dish were stirred together. The rod served to break down any of the larger particles of the granulated solid residue. This residue subsided with very great facility and very quickly, so that the ether was generally left transparent. This was decanted into a beaker, so that there was the means of observing whether any solid matter was decanted away or not. This treatment with the ether took place four times. The liquid never went into a filter, and the solid residue from which the result was estimated never went out of the dish. An entry was made in a book of the contents of each dish; for he might state that he sometimes had perhaps twelve or fifteen or twenty samples of milk to analyse in a day, and therefore it was necessary to be extremely careful that there was no confusion of one sample with another. Each sample was marked by a number and a letter, and that was entered in the book, and the weight of the dish was put against the entry. Each dish had a special weight, no two dishes agreeing in that respect; and hence there was no chance of one dish being mistaken for another, or of an admixture of the samples during the process of analysis. The fat was dissolved out with the ether and simply decanted off. When he was satisfied that no solid matter had been carried away with the fat, it went into a common bottle, and the ether was distilled away when a quantity had been accumulated, so that it might be used over again. When the first solid residue had been evaporated to dryness, so that it lost no more weight, its weight was entered against the weight of the dish. After it had been exhausted with the ether and the fat had been taken away, the weight of the non-fatty solid residue was entered again, and the one weight deducted from the other, the difference of weight representing the fat which had been dissolved out. All these results were obtained in the dish, and the sample never went

out of the dish. No other apparatus was employed in the process. The material never went into the filter. The specific gravity of the milk was taken before the process was commenced, and if there was any doubt as to the milk being genuine, there were two other operations which would be performed, in which case, certainly, the residue had to be turned out of the dish. If there was any doubt about it, the ash was determined, and for the determination of that the non-fatty solid residue was turned into a platinum dish and calcined, and then its weight taken. Then the ash was treated with distilled water. That which the water dissolved out had the chlorine estimated. Those were the only determinations that were required or resorted to, and that, he believed, was the general mode of operating that was adopted by public analysts with very few exceptions.

Obituary.

BRADSHAW.—January 28, Mr. Robert Bradshaw, chemist and druggist, of Cheltenham.

BLACKBOURN.—January 17, Mr. John Blackbourn, chemist and druggist, of Snargate Street, Dover, aged 65.

BULLUS.—January 25, Mr. Benjamin Bullus, chemist and druggist, of Fareham.

DUNN.—January 11, Mr. John Dunn, chemist and druggist, of West Port, Selkirk.

EDWARDS.—February 1, Mr. Joseph Edwards, chemist and druggist, 11 New Cavendish Street, London.

GORDLEIGH.—February 28, from pneumonia, Mr. Paul William Gibbs Gordleier, pharmaceutical chemist, of Sittingbourne, Kent, in his 75th year.

INGLIS.—February 14, Mr. William Gordon Inglis, chemist and druggist, of James Street, Cardiff.

JACOBSON.—February 26, Mr. Nathaniel Jacobson, aged 71, well known as a chemist's valuer, Walbrook, London.

JAMES.—January 23, Mr. John James, pharmaceutical chemist, of Truro.

L'AMY.—February 11, Mr. Sylvester L'Amey, chemist and druggist, of Dundee.

LANGLEY.—February 12, Mr. Stephen Langley, chemist and druggist, of Moor Street, Chepstow.

MANSSELL.—January 19, Mr. William Mansell, chemist and druggist, late of Plough Court, Lombard Street.

MANTHORPE.—February 1, Mr. Samuel Manthorpe, pharmaceutical chemist, of Colchester, aged 66. Mr. Manthorpe had been in business upwards of 41 years.

PALK.—February 20, Mr. John Palk, of Ivy Cottage, Exeter, pharmaceutical chemist, aged 71, was well known as a chemist's valuer. Mr. Palk had retired from business about two years since. He died at Ilfracombe.

PEEL.—February 8, Mr. James Peel, pharmaceutical chemist, of Stockwell Road, Surrey.

SAWYER.—January 22, Mr. James Sawyer, pharmaceutical chemist, of Carlisle.

SAY.—January 19, Edmund Say, chemist, of St. Giles', Norwich, aged 39. The deceased was formerly in business at York.

SCHIBILD.—January 31, Mr. John S. Schibild, chemist and druggist, of Willow Walk, S.E.

SOLLY.—February 2, at 3 St. George's Circus, London, S.E., Mr. Stephen Francis Solly, pharmaceutical chemist, aged 67.

STEELE.—March 2, Mr. Eli Steele, chemist and druggist, of Upper Tean, Staffordshire.

STEPHENS.—January 4, Mr. Thomas Stephens, pharmaceutical chemist, of Merthyr Tydfil.

TOOGOOD.—February 3, Mr. Francis Toogood, chemist and druggist, of Caroline Street, Hull.

UNTHANK.—February 23, Mr. John Unthank, chemist and druggist, of Wakefield, aged 30.

WELLS.—January 6, Mr. John William Wells, chemist and druggist, of Castle Street, Oxford Street.

WILKES.—January 29, Mr. George Wilkes, pharmaceutical chemist, of Mile End Road, E.

WILSHAW.—February 15, Mr. James Wilshaw, pharmaceutical chemist, of Wordsley.

In our last obituary, the name of Mr. William Forbes appears as of Reading; it should have been Reigate; also the date should have been January 9, not February 9.



BANKRUPTS.

COULTHARD, CHRISTOPHER, Cumberland Villa, Cavendish Road, Kilburn, chemist's assistant. Feb. 19.

MORRIS, WILLIAM, Deritend, Birmingham, surgeon. Feb. 26.

THISTLETON, JAMES, M. 1 Old Quebec Street, Portman Square, medical galvanist. March 6.

WILKINSON, MENCE, Hurfield House, Handsworth, Yorkshire, and Sheffield, chemist. March 4.

LIQUIDATIONS.

(By arrangement or composition.)

Notices of first meetings have been issued in *re* the following estates. The dates are those of the petitions:—

DAWNEY, CHARLES, Cheap Street, Bath, chemist. Feb. 20.

FEARNS, FRANCIS HENRY, Red Lion Square, and Stafford Street, and Marlborough Road, and Valentine's Cottage, all Peckham, export manufacturer of philosophical, optical, and magneto-electric instruments. Feb. 11.

FENWICK, THOMAS WRIGHT, Stamford, manager, late Coleman Street, London, druggist and perfumer. Feb. 22.

HODGE, JOHN, High Northgate, Darlington, medical botaist. Feb. 10.

HOULDER, WILLIAM, and WILLIAM WASHINGTON HOULDER, trading as WILLIAM HOULDER, SON & CO., 23 Upper Thames Street, and Southall, vitriol and chemical manufacturers. Feb. 15.

NICKSON, THOMAS, Burton-upon-Stather, Lincolnshire, druggist, flour-dealer, and grocer. Feb. 11.

QUICKE, PITMAN RICHARD, 127 Buckingham Palace Road, chemist. Feb. 23.

RYDER, FRANCIS J., Avebury, Wilts, surgeon. Feb. 10.

STABLES, WILLIAM, JUN., Tilehurst, near Reading, late Clifton, Bristol, prev. Merthyr, form. Nottingham, M.D. and surgeon. Feb. 19.

VOULEY, FOSTER, Rushden, Northamptonshire, dealer in drugs. March 2.

WILKINSON, MENCE, Clapham Road, Surrey, late Hurfield, Yorks, farmer and chemist. March 4.

BANKRUPTCY ANNULLLED.

PAGET, HENRY W. (May 13, 1869), West Drayton, druggist. Feb. 16.

PARTNERSHIPS DISSOLVED.

BIRCHALL & HARVARD, Leeds, druggists and drysalters. Feb. 12. Debts by James H. Harvard.

CARLESS & CHRISTIE, Sarnbrook Court, Basinghall Street, and Railway Arch, Deptford, disinfecting-powder and japan manufacturers, and oil merchants. Feb. 4. Debts by Plaxton S. Carless.

HAYMAN & LITTLE, 2 Westbourne Place, Clifton, Bristol, surgeon dentists. Dec. 31. Debts by Alfred G. Hayman.

HUNT, J. H., & Co., Stratford, chemical light manufacturers. Jan. 30. As regards Anthony Palmer.

KNOWLES & CLARK, Clockchance, Yorks, dry soap manufacturers and drug grinders. Feb. 2. Debts by James T. Clark.

LYON, ROBERT, & Co., Brook Street, Ipswich, chemists. Jan. 5.

MEATTARD & SAPP, Basingstoke, chemist. June 24. Debts by Arkas Sapp.

MITCHELL & EDWARDS, Wickham Road, and Amersham Park Villas, New Cross, surgeons. Jan. 7. Debts by Robert N. Mitchell.

NEWNHAM & GOWDIN, trading as THE BRITISH CONDENSED MILK COMPANY, 97 Leadenhall Street, milk-condensers. Feb. 4. Debts by Alfred A. Newnham.

NIELD, A. & R., Hope Mill, Miller Street, and Shudehill, Manchester, druggists and drysalters. Dec. 31.

OLDMAN & HOLDENESS, Huntingdon, surgeons. Dec. 31.

RUMSEY & WREN, 51 Old Bethnal Green Road, perfumers and druggists' sundrymen. Dec. 10.

SAPINEAN & BECKLES, 138 Fenchurch Street, chemists. Feb. 2. Debts by Charles R. Sapinean.

SHAW & RAWORTH, High Street, Chesterfield, chemists. Dec. 31.

TAYLOR, GIBSON & Co., Elgg Market, Newcastle, chemists. Dec. 31.

TUCKETT & SKRIMSHIRE, Ciydach and Brynmawr Llandly, Brecon, surgeons. Feb. 15.

WARWICK, PHILLIPS & DEEPIING, Southend, Essex, surgeons. Dec. 31. Debts by William R. Warwick.



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Germany .. 10 marks.	Sweden .. 24 dols. specie.
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J. ALFRED WANKLYN, M.R.C.S., London,
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Joint Author of a Book on Water Analysis, and of the Ammonia Process.

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THE NEW ADULTERATION BILL.

THE patient retailers of Great Britain seem doomed to suffer a good proportion of the grievances enumerated by the Prince of Denmark as incentives to the employment of "a bare bodkin." "The proud man's contumely," and "the insolence of office" are old acquaintances; but perhaps they have never stung so sharply as in these days, when Civil Service Co-operative Stores are flourishing around us, maintained and conducted by the employes of the nation, and backed by our legislators, while they openly defy the plainest moral and legal obligations.

The Adulteration Act has introduced us to "the oppressor's wrong" somewhat literally, and now that this is generally admitted, and a tardy attempt is promised to put straight the scales of justice, we may anticipate a pretty fair share of "the law's delay," in order that the torture of Tantalus may be added to our other punishments.

Of course it would be monstrous to expect that a bill intended to redress the grievances of shopkeepers should be regarded as urgent in the House of Commons. Honourable members are only beginning to open their eyes to the fact that tradesmen, as such, can have any rights at all. The Army, the Church, and the Legal profession have from time immemorial exercised the anxiety of the Legislature; and of late years a new pet has been introduced in the shape of the working classes. But traders must look in vain for aid from others but themselves, and even men from their own ranks elevated to the benches of the House

have too often forgotten the rock from which they were hewn, and adopted, as far as they have been able, the higher life of the new society into which they have entered. So we need not be surprised if frequent adjournments of Mr. Slater-Booth's new adulteration bill should occur; nor if the present admittedly oppressive enactment should remain in force until the end of the session, and perhaps even beyond that period. The bill must, at all events, go to the wall until the rights of officers in the army are duly settled, until the loss of Earl Dudley's jewels has been sufficiently inquired into, until Dr. Kenaly has shaken the dew-drops from his mane, and until the various members with special grievances on their brains have each had an evening's clear course to trot their hobby-horses out.

The new Sale of Food, Drink, and Drugs Bill has been introduced into the House of Commons by Mr. Slater-Booth, the President of the Local Government Board, read a second time and committed. The consideration of it has been postponed till the 19th of this month, but as that is not a Government night it stands an excellent chance of being knocked out again, and, if so, will then no doubt be adjourned into the limbo of the other side of Easter, there to take its chance in the struggle for existence with the ecclesiastical difficulties which it is likely will again occupy the latter half of the parliamentary session. In the bill as introduced it must be admitted that the objections of traders to the last Act seemed to have been allowed considerably, but Mr. Slater-Booth took particular care to assure the House that he was willing to modify his concessions in this respect. It was proposed that an accused tradesman might plead that he himself was not responsible for the adulteration in any proved case, and that if he could satisfy the Court appointed to try him of his innocence he was to be discharged. According to ordinary rules of justice this proviso was reasonable enough; but it seems to have been a great deal too reasonable for the able critics who have spoken and written on the subject since. The *Times* and a crowd of other journals reject scornfully the notion that "a plea of innocence" should be even permitted in the case of tradesmen accused of adulteration.

"The public," says the leading journal, "has only the retail dealer to look to, and cannot suffer him to evade his responsibilities on any plea of innocence or ignorance."

Julian the Apostate, it is said, was once called upon to decide a doubtful case in which the word of the accused had to be set against that of the accuser. He set the prisoner free. "What," exclaimed the adversary, "you take his bare word! Who would ever be guilty if each could escape by pleading innocence?" "And who," answered the Emperor, "would be innocent if it sufficed to accuse him." Things are different now, however; we are happy in the possession of an Association of Immaculate Public Analysts, and the mere accusation of a tradesman by one of these ought to suffice to ensure a conviction.

For ourselves we cannot regard the new bill very hopefully. The clauses introduced to protect innocent tradesmen seem doomed to excision, the definition of adulteration seems likely to be as vague as ever, and the arrangements in this as in the former Act are admirably calculated to ensure all degrees of energy in the methods of local procedure, and the utmost variety in magisterial decisions. The wreck of the Act now existing is due beyond all doubt to the analysts. With a few exceptions they have proved either incompetent, or, what was almost worse, so hungry after fame and newspaper notoriety, that they have rushed into courts with accusations which they were willing enough to swear to, but which, in dozens of cases, when challenged, they were utterly unable to prove. Why is this? Clearly, because the Act gives to a smart analyst such splendid opportunities of advertising himself at the expense of retail tradesmen. Already the analysts are talking as if they had a sort of vested interest in the prosecutions, and the anger

with which they repel any suggestion of the appointment of a Court of Appeal outside of themselves is richly amusing, after the continual conflicts of scientific evidence to which they have accustomed us. The obvious remedy for half the grievances caused by the present Act would have been to alter radically the system of analytical appointments. If the Local Government Board were to establish a few centres, superintended by competent and well paid chemists, with no interest in making cases, as urged by one of the members of the Select Committee (Mr. Sandford), adulteration would be far more effectively checked, and unjust prosecutions would almost cease. A correspondent of ours points out elsewhere very forcibly the anomaly of appointing as analyst, as is often done, some one in business himself. The public analyst should be a salaried and perfectly independent government officer, and should also be assisted by a salaried and independent legal counsellor, if laws against adulteration and adulterators are to be carried out efficiently and fairly. The problem then remaining would simply be to punish clear cases of fraud, but why it should be necessary, as is so glibly assumed, to punish admittedly innocent persons, or to prevent the public from getting certain articles under certain names, is more than we can understand.

It is very easy to say that dealers are expected to know their business and to be judges of the articles they sell, but such an argument is ridiculous in the face of the constant mistakes which have characterised the evidence of professional experts. Retail tradesmen, when they buy goods at prices at which, honestly prepared, they could not be sold, are parties to the fraud, though in a sense they might still plead that they had not "knowingly" adulterated the substances. These would be points for the judge to decide on the merits of each case. But tradesmen who desire to be honest, and who "knowingly" would neither cheat nor poison their customers, have as fair a right to be considered in the passing of this bill as has that imaginary "poor man" who, in the debate in the House of Commons, was so often alluded to, and who, it would appear, is so particular about his valuable stomach that he would never if he could help it insert anything therein without first dividing it into three portions, and sending one of those duly sealed and numbered to the office of the public analyst.

In truth the problem to be settled is not such an extremely difficult one if the draughtsman of a new bill would not so persistently endeavour to follow in the lines of the previous Act. What is required is to punish any British subject who commits, or is a party to the commission, of fraudulent adulteration. It need not be impossible to define what is fraudulent adulteration; it need not be impossible to find out occasionally who is actually the perpetrator of such felony, and a few convictions and imprisonments of actual offenders would have a far more deterrent effect than these numberless prosecutions, which are so evidently unjust that they have actually aroused more sympathy for the prosecuted than for the prosecutors. If there is a difficulty in getting at the real criminals that is no reason why substitutive justice should be inflicted on the first comer, nor is there any immutable reason why profitable employment should be found for all the members of the Society of Public Analysts, if it can be shown that a few really able men could better accomplish the work which they have so lamentably bungled.

THE PRELIMINARY EXAMINATION.

THE mode in which this important examination should be conducted received the official consideration of the Council at their last meeting. The exigencies of the times and altered circumstances first suggested and now have rendered necessary

certain definite changes. Dating some years back, the whole educational curriculum was elementary in its character—candidates were comparatively few; and it would have been unreasonable in the infancy of the Society to have required too high a standard from those entering the ranks of pharmacy. Consequently the Preliminary was entirely *visu voce*, and was limited to evidence furnished by the student that he had enjoyed a decent grammar school education, and that he had not wholly forgotten the Rule of Three. Gradually small doses of Pharmacopœia Latin were introduced; and "Caesar," dethroned from its former position in our scholastic establishments, found a refuge in the Square. Still this matriculation test remained fully within the compass of pharmaceutical examiners—it did not trench upon their other duties, nor did it divert their energies from those objects which specially claimed their attention. Thus far will be conceded by Mr. Atkins, the zealous advocate of the *new regime*. It is no disrespect to the present Board of Examiners to point out that this condition of affairs exists no longer. No member of the Society questions for a moment their ability to grapple with the Classics, or to judge wisely and in an authoritative manner respecting attainments in arithmetic or English literature. But the number of those presenting themselves for this ordeal has swelled enormously; attention to this department has become an actual burden; and the examiners have full exercise for their discriminating powers with regard to those subjects which belong to their proper sphere. The Preliminary has, in fact, outgrown its once modest proportions; extending its range, it has become a distinct branch of study, and the right direction of its machinery demands two things which can scarcely be expected from men engaged in technical pursuits—time specially devoted to its service, and a peculiar training not usually compatible with the business of an active life. Entirely, therefore, do we agree both with the spirit and letter of the remarks that fell from Mr. Atherton when he proposed "That the questions for the Preliminary Examinations after the present year be prepared, and reported upon, by the College of Preceptors." He did not wish in any way to depreciate the ability of the examiners or the fairness and honesty with which the examinations were conducted, but it was only fair and just to the Society that the Preliminary Examinations in purely elementary scholastic subjects should be conducted by gentlemen who had received some special instruction in that direction. The question had been brought forward by Mr. Atkins, at the Pharmaceutical Conference at Brighton: Mr. Carteighe had concurred in the desirability of handing over matters essentially of a school nature to recognised authorities; and he might fairly have added that other pharmacists, particularly such as were themselves personally interested in strict literary pursuits, entertained the same opinion.

Mr. Schacht, on the contrary, did not see any reason for making the proposed change, and thought they had better let well alone. He saw no objections to the present system, or the advantages to be derived from that proposed. One thing, he observed, was quite clear, that if we once parted with the control of these examinations we should never be able to retrace our steps, and we might exchange a present good for a doubtful contingent amelioration. Mr. Schacht erred in interpreting the measure of surrounding scholarship by his own, but we assure him, notwithstanding, that as far as the future is concerned, and for that we legislate, no mere culture, apart from direct collegiate training, can keep abreast with the improved methods of communicating and acquiring knowledge which stamp our modern education. One hour with the College of Preceptors, and half that time with a man fresh from Oxford, will abundantly confirm this point. Should there yet remain a spirit of unbelief, we would recommend the employment of a quiet morning at any of our splendid national

institutions, or, when the labours of the day are ended, the perusal of a few pages of Morell. Then, we think, we shall appreciate the wisdom of the adage, *sum cuique*; and recognise the fact that so exacting are the requirements of separate branches of research that the best chance of ultimate success is to do one thing thoroughly and therefore one thing well. Our examiners should not be burdened by duties which can be efficiently discharged elsewhere; and they should be allowed to work out that special educational career which has for its goal the advance of pharmacy, unfettered by extraneous and preliminary considerations.

THE STORY OF AMERICAN OPIUM.

IN the course of the meeting of the American Pharmaceutical Association at St. Louis, last September, an exposure was made of a somewhat extensive and particularly audacious swindle of druggists and physicians, which seemed to have been carried on with no little success for a considerable time. Mr. Ebert, of Chicago, raised the subject, and, other gentlemen adding their quotas of experience, it becomes possible from the report to trace a connected narrative of the enterprise.

It appears that so far back as 1868 a lean, long-haired gentleman from Vermont called on Dr. Squibb, the eminent pharmacist of Brooklyn, very early one morning, carrying a carpet-bag with samples of "American-grown opium." Naturally, Dr. Squibb was interested in the man's story, took a sample and assayed it. It yielded some 6 or 7 per cent. of morphia, and thus opened up a glorious vista of commercial prospects for the United States. Dr. Squibb seems to have sent the gentleman and his carpet-bag to Professor Procter, of Philadelphia, who, after a careful examination of another sample, in which he found 6.25 per cent. of morphia when the opium was moist, or 7.44 if in a dry state, published a report in the *American Journal of Pharmacy* narrating this discovery. After quite a scientific account of the cultivation and preparation of this native opium, derived evidently from Mr. Welcome C. Wilson, the lean, long-haired gentleman himself, and his own assay, Professor Procter added: "The maker appears to be entirely candid and honest in his conduct of the process, and the fault is 'not knowing' the real character of the substance he is dealing with."

In spite of our righteous indignation against the perpetrator of the fraud, it is difficult to resist a little furtive amusement at the picture thus suggested of the accomplished pharmacist on the one hand, gravely testing the opium, and on the other the lean, long-haired Vermont Yankee, "with his smile that was child-like and bland," assuring the Professor, regretfully, that this opium cultivation was really "a game he did not understand." The reputation of the article being now established, sales of course followed. Dr. Squibb seems to have purchased ten pounds, and Messrs. Rosengarten & Sons invested in six pounds. The former got .09 per cent. of morphia from his new property, and the latter could discover none at all. Of course Professor Procter publicly retracted his recommendation, and thus did all he could to check any further swindling. But it appears from the statements by Mr. Ebert, Mr. Mattison, and others, that recently "a lean, long-haired Yankee, with a carpet-bag," has been stamping the North-western States and imposing on not a few of the druggists and physicians thereabouts with his native-grown opium, "recommended by Dr. Squibb, Professor Procter, and others." According to Mr. Mattison, who had recently been travelling in Mr. Wilson's track, the drug is offered as Ohio, Illinois, or Wisconsin opium, one of the favourite localities for its production being the banks of the Kickapoo river. Sometimes druggists remonstrate on the smell

differing from opium, but Mr. Wilson is quite ready for that objection. He says: "Yes, this would smell that way if I would mix it with cow-dung, but I suppose you would rather pay a dollar a pound duty on cow-dung from Smyrna than buy pure American stock." With a touch of gentle irony, Mr. Mattison added "that in Nebraska he had found an evident disinclination to talk about the sale of this opium. All thought some one else had bought some, but they themselves had not." The rasal states that Dr. Squibb had told him that Government ought to make some public recognition of his services—a sentiment which, though perhaps never uttered, we have little doubt Dr. Squibb would now most cordially endorse.



GERMAN BEER.

THE insipid stuff which under the name of "lager bier" has of late years been gaining popularity in England as a beverage, partly perhaps for the reason of its foreign origin, for this is particularly tempting to a large class of our *jeunesse dorée*, but mainly, no doubt, from a general belief in its innocence and wholesomeness, has lately been accused of ingredients in the possession of which even British bitter would blush. An influential member of the German parliament, Dr. Löwe, made a statement during the discussion on the Budget which ought to be proved or disproved promptly. He asserted that the revenue derived from the malt tax did not advance in proportion to the increased consumption of beer, and this, he said, was owing to the fact that brewers used other substances as substitutes for malt. "At present," we quote from his speech as given in the *Brewers' Journal* of February 15, "the article in most general use as a substitute for malt is the *Herbstzeitlose*, or colchicum, not in the shape of the seeds of the plant, which are well known as a valuable ingredient of our *Materia Medica*, but in the much more deleterious and dangerous form of the roots or tubers of that bulbous plant. Nobody," he added, "will be bold enough to deny the fact that, since the passing of the law—I will not say in consequence of it—the quality of our beer has greatly deteriorated, a complaint that has now become very general everywhere in Germany." Some time ago it was stated that colchicum seeds were used by German brewers as a substitute for hops, a statement which we believe was not substantiated. It is possible that the learned deputy may have mixed ideas in his mind when he made the charge, and for our part we cannot conceive that German brewers could be so utterly insane as to employ such a poisonous substance as a substitute for either hops or malt; but until they are satisfied to the contrary, English tipplers had better bear the ills they have in their own drinks, which do not pretend to be anything but injurious, rather than fly to others which they know not of, and which may be deadly.

PHARMACEUTICAL STATISTICS.

ACCORDING to a Paper recently drawn up by Mr. Bremridge, Registrar and Secretary of the Pharmaceutical Society, there were 13,286 persons on the register on December 31, 1874. Of these 2,347 were pharmaceutical chemists, and 10,939 were chemists and druggists. In 1874 there were 1,332 pharmaceutical chemists who were members of the Society, against 1,848 the previous year. The number of chemists and druggists who were members of the Society were 811 in 1874, against 778 in 1873. Associates in business, 459 in 1874, 371 in 1873; associates not in business, 830 in 1874, 681 in 1873; apprentices

or students, 795 in 1874, 727 in 1873. Mr. Bremridge also adds some figures respecting the Benevolent Fund, of the interests of which he is always most jealous. The total amount received during 1874 was 979*l.* 1*0s.* 1*d.* Of this sum members and associates of the Society subscribed 679*l.* 5*s.* 8*d.*; registered chemists and druggists not connected with the Society, 157*l.* 5*s.* 4*d.*; persons not on the register, 29*l.* 3*s.* 6*d.*; firms, 86*l.* 6*s.*; committee of Chemists' Ball, 21*l.*; and balance of Sandford Testimonial Fund, 6*l.* 15*s.* 7*d.* The temporary aid granted during 1874 was 223*l.* 12*s.* to persons connected with the Society; 205*l.* 5*s.* to persons unconnected with the Society.

FANTASTIC CHEMISTRY.

IN the infancy of the French Academy of Sciences it gave itself up to experiments suitable to its age. On one occasion it distilled a melon weighing five pounds, the seeds carefully removed: the liquor was divided into nine portions, all of which were slightly acid, with the exception of the first; the ninth contained considerable *sal volatile*, and there remained four grains of *sel trisivié*. It would hardly seem possible to make a more primitive experiment.

Another day it was the turn of the toads: forty unlucky *batraciens* were distilled alive; they weighed two pounds and eleven ounces, the liquid weighed about thirty-five ounces. The first five ounces which came over was clear and limpid, the second clarified *l'eau de sublimé*, the third—let us say as little as possible of that—the melon liquor was far more agreeable to distil.

Three pounds of "excellent coffee" supplied another subject for study. It was demonstrated that one of five parts of the *liqueur* had the odour of cummin, very bitter, and rendered the solution *de sublimé* milky, exactly like the liquid distilled from the toads.

The Academy regarded this as a real scientific conquest. This subject of coffee was again taken up in 1715: one Jussieu—the first of his celebrated name—in order to neutralise the saline and sulphurous elements which coffee contains, proposed the following method of using it, which certainly ought not to have taxed his genius much to suggest: Drink a glass of water before taking the decoction or infusion, use sugar to take away the bitterness, and add milk or cream to dilute the sulphur, absorb the saline elements, and render all nourishing. The scientific origin of *café au lait* is perhaps not so widely known as it should be.

For more than a century the *Académie des Sciences* progressed by these fantastic experiments but slowly; later on, however, more rapid advances in scientific knowledge were made, as is well described by its historian, M. Bertrand, who supplies us an account of the foregoing among other *naïve* processes, which give an idea of the ground gone over. Curious medical and physiological investigations also occupied the attention of these old-time savans; among others the Academy took up the question whether vipers could communicate their poison to each other by their bite, and it was proved that the only effect was a few moments of melancholy.

The Observatory, at the epoch of which we write, did a little "fantastic astronomy." A comet appeared, and the grand Louis XIV.—the "Roi Soleil"—jealous for his own luminous glory inquired of his astronomers about its course. "Our way," replied Cassini, who had as yet observed it but once, and consequently could not tell its probable ellipsis: the comet went in another direction. Happily for the Observatory Louis did not notice their error; he remembered, however, that Cassini and his *confères* pretended to be acquainted with all the secrets of the firmament, and the first eclipse that occurred he commanded them to come to Versailles with their instruments polished up to exhibit to the Court beauties how Phœbe met Phœbus. This great service (!) rendered to science in the seventeenth century by the Observatory staff was duly recorded in their "Proceedings."

IRISH PHARMACY.

A SPECIAL meeting of the Society of Chemists and Druggists of Ireland was held at the Society's rooms, William Street, on Tuesday evening, Feb. 24, to receive a report from a deputation to Sir Dominic Corrigan on the subject of pharmaceutical legislation for Ireland; the President, E. M. Hodgson, Esq., in the chair. The Secretary informed the meeting that, in accordance with a resolution of the Society, the President and himself had waited on Sir Dominic Corrigan, and requested the President to state to the meeting the result of the interview. The President said the deputation was cordially received by Sir Dominic, and the subject was thoroughly discussed. He expressed his opinion that if the number of pharmacists in this country was to be increased it must be from the ranks of the chemists and druggists. He believed that a change in the state of pharmacy in this country must shortly be made. He recommended the Chemists' and Druggists' Society to prepare a bill and ask Government to introduce it. He cautioned the Society against allying itself with any existing body. Ireland had its independent College of Physicians and College of Surgeons, and he considered it but just that it should have its own Pharmaceutical Society.

A committee, consisting of the following, was then appointed to prepare a bill for the establishment of a Pharmaceutical Society for Ireland. Messrs. E. M. Hodgson, President; Professor Titchborne, Vice-President; W. Hayes, Hon. Secretary; J. Goodwin, Hon. Treasurer; W. Allen, A. Doran, J. T. Holmes, Stanley Oldham, and R. Simpson.

At a meeting of the Society on Tuesday evening, March 9, the President in the chair, the bill framed by the committee was read and submitted for the approval of the Society. On the motion of Mr. Grindley, seconded by Mr. Johnson, the consideration of the bill was postponed until each member had been supplied with a printed copy. On the motion of Mr. Holmes, seconded by Mr. Allen, it was resolved to send a copy at once to Sir Dominic Corrigan, and to ask his opinion. In framing the bill the committee have followed the English Act as far as practicable.

WESTERN CALOMEL.

"MANY years ago," said the President of the American Pharmaceutical Association, in the course of his address at St. Louis, "when this great Western country depended on the Eastern markets for merchandise of all kinds, a Western merchant in an Eastern city concluded to take a dose of calomel, and accordingly purchased an ounce of that sovereign remedy, of which he took a teaspoonful and retired. Very soon he was taken ill, and a physician was summoned, who, on examining his patient, recognised symptoms of poisoning. After much inquiry he learned the cause, and was very much astonished to hear from the merchant that one teaspoonful of calomel was his usual dose when at home. The physician repaired to the drug store from which the medicine had been sold, and after explaining the case to the pharmacist, received the following interrogatory: 'Why in the devil did he not ask for Western calomel?'"

GERMAN DRUGGISTS.

THE druggists of Germany, in opposition to the apothecars, have formed an association which already numbers 600 members. They intend to hold a general assembly in May next, either at Berlin or at Leipzig. The branch association at Dresden has distinguished itself beyond the rest by its determination to promote the interests of its members. It has established a "Sunday-school" for druggists' assistants and apprentices, with classes for instruction in chemistry, book-keeping, and general business! This is a feature of Teutonic superiority to old-world prejudice and ignorance which we never hope to rival.



THE HYPOPHOSPHITES IN CONSUMPTION.*

HOWEVER Dr. Churchill's theories or his manner of expounding them may be open to criticism, all the world admits his opening statement as to the mighty power wielded over the human race by the cruel, deadly destroyer, consumption. "The amount of suffering and destitution," says our author, "produced by this cause throws all other afflictions into the shade. Pestilence, famine, revolution, and war, are fitful noisy pygmies compared with this silent, slow and unceasing destroyer." One-seventh of mankind are the prey of this insatiable enemy, and in a large proportion of instances its victims are the young, the promising, and the most valuable members of the society. Undoubtedly this is a foe that is worth fighting, and every physician who devotes himself to the study of the disease, even though he should seem to fail completely in all his efforts to conquer it, deserves our gratitude. In his own vigorous, vivid style, Dr. Churchill shows us that in medicine, as in any rate, the earnest labourer is not always thought worthy of his hire. He says:

People have generally a very low opinion of inventors. To be an inventor is pretty much the same as to be a dreamer, a schemer, or an impostor. Not only is there never any reward for honest, devoted, though unsuccessful labor for the public good, but neither interest nor sympathy for failure. There is no nobleness or charity for inventors, as if it were more honorable to do nothing than to attempt something and to fail. The infinite Creative Power scatters with boundless profusion the germs of life, most of which are doomed to perish and seem to have been sown in vain; man in his greed and self-conceit looks upon failure as a disgrace and as worse than cowardice and sloth. If there is no sympathy for those who fail, there is little gratitude for those who succeed. Not to go beyond the range of medical discovery: even when great inventions have become fully recognised and acknowledged on all hands, the public is perfectly indifferent to the fate of the discoverers, or of those who were near and dear to them. Only a few years ago the last surviving relative of the great Jenner, the discoverer of vaccination, was in deep distress. A subscription started in his favour hardly produced a few pounds. Of the many millions who, but for Jenner's discovery, would long since have been rotting in their graves, not a hundred came forward to testify their gratitude. Jenner but a few years ago was a poor man, and his discovery has saved his relative would have been in the enjoyment of affluence, and ranked with the proudest in the land. The great boon of insensibility to pain by the use of anaesthetics (the laughing gas, ether, or chloroform) has carried comfort and courage to sufferers all over the world. The discoverers of etherisation, Morton and Jackson, were voted 100,000 dollars by the Congress of the United States, and to the lasting disgrace of their country, they never received it. Jackson was living a short time since in obscurity. Morton fell into such distress that he committed suicide. Wells, the first who applied the laughing gas to the suppression of pain during an operation (the extraction of a tooth), afterwards, out of despair or want, died by his own hand. Public opinion is so utterly gone astray, or, to speak plainly, is warped with such shameless dishonesty upon this subject, that some time back a reviewer had the indecency to state that he was rejoiced to think neither Morton nor Jackson had ever received any reward for their discovery, because they had attempted to keep it secret. Be it added that neither of them belonged to the medical profession—Jackson was a professor of chemistry, and Morton a dentist. If I chose to travel out of the domain of medicine, instances, to any number of the same kind might be quoted from the whole range of science and industry. The history of the industrial progress of this century is but one long record of the shameless and bestial ingratitude of the public towards those who have served it best.

Our extract indicates two things; first, that the literary style of the work is much superior to medical compositions generally; and secondly, that the book is written rather for the public than for the profession. The first characteristic is undoubtedly a merit, and we take the opportunity of hinting at the source of this superiority. Dr. Churchill has spent a great part of his life in Paris, and he has very obviously caught in English that epigrammatic force which is such a distinguishing feature of French literature. We could wish that the style were more generally cultivated by our scientific authors. But we do not wish to see Dr. Churchill's example in the other respect widely followed. The public is not and cannot be a competent judge of Dr. Churchill's claims. He professes to have discovered a remedy for consumption. He arrays his theories and his illustrations with considerable skill; a strong odour of science pervades his pages; and a consumptive patient reading this book would be raised to the seventh heaven of hope by its revelations. Apparently this is the object sought for; but it is not creditable. Dr. Churchill should be content to be judged by his peers; if, as he believes, their verdict is unjust to him, there remains no honourable

* Consumption and the Hypophosphites. By John Francis Churchill, M.D., Paris. London: Longmans.

alternative but a tacit appeal to posterity. This is but cold sentiment, truly, and impatient men scorn it; but it is a sentiment that has supported so many great hearts in the world's history that we watch the decline of its influence with no small misgiving. Materialism is gaining on us apace; but we trust there will long be men in our midst who will refuse to subscribe to this author's declaration that "posthumous honours" are "an idiotic farce" (page 405).

In 1855, Dr. Churchill tells us, he set himself to discover a cure for consumption, and the account he gives of his success is such that of itself can hardly fail to raise a twinge of suspicion in the mind of the sceptical reader. He professes that by a process of pure reasoning, the various steps of which he gives just as if the difficulty were a mathematical problem, he came to the conclusion that the hypophosphites were the true scientific remedy. He adopted them, and the history of his treatment of consumptive cases from that date to this, by his means, occupies a great part of the book. It is not for us to say what is the value of the remedy. A wide and extending employment of them is an argument which possesses much force. Among English authorities not a few of the chief have found them of more or less service in certain stages of the disease. Dr. C. J. B. Williams has given a qualified, and Dr. Thorowgood a much more hearty, testimony to their value. Dr. Churchill cites also the published opinions of a number of eminent foreign physicians, many of whom are warm believers in this system of treatment. Besides, his own very extensive record of cases must be allowed its value. Surely one might think the doctor ought to be satisfied with so much triumph in only seventeen years; but a half-victory of this sort is by no means sufficient for him. Nothing less than the universal admission that he is the greatest benefactor of this or any other age, for such he assuredly is if his claims are true, will content Dr. Churchill. Most heartily we hope he is right; a monument as high as the Tower of Babel will not express our gratitude; but if that acknowledgment should ever come, the volume he has just published will help to tarnish his glory.

Dr. Churchill would have it appear that his discovery of the hypophosphites as a remedy for consumption is a scientific conclusion founded on inductive reason. From his own narrative it appears to be nothing of the sort. "The phenomena of this disease," he says (page 24), "is the formation of tubercle, 'appeared to me to be attributable to the loss or diminution of some essential element.' A guess, clearly, founded on some observations no doubt, but just about as likely to be wrong as right. "What element should I begin with?" After thinking of various substances the discoverer guesses again at phosphorus. Supposing his guesses to be so far right, there was certainly a little more like scientific method in his conclusion to employ the hypophosphites. His reasons are given, which, for lack of space, however, we must pass over; but we mention this process to show what sort of logic Dr. Churchill offers as the basis of his process. His account of the mode of action of the specific is equally a fabric of guesswork. The medicine may be a specific, but Dr. Churchill has not shown, as he professes to do, that it is anything more than an empiric remedy, and if he really solved the problem in the short and easy way described by himself he must be congratulated on being the most lucky discoverer that ever lived.

Certain physicians, notably Drs. Quain and Cotton, at the Brompton Hospital, have reported unfavourably of Dr. Churchill's "specific." The author's remarks on these gentlemen and their experience, though keen and clever, assumes such an utter absence of good faith in his opponents that we can hardly regard them as requiring an answer. His narrative of Dr. Henry Bennet's case, however, seems to demand some explanation. That physician is stated to have privately admitted that he was himself cured of consumption by the hypophosphites under Dr. Churchill's treatment, and to have publicly asserted that he owed his recovery to the climate of Mentone. In criticising Dr. Williams and his results, the author manages to lose himself somewhat clumsily through the temptation which he cannot resist of giving an epigrammatic finish to one of his sentences. Dr. Williams has stated that in his hands the hypophosphites used alone have not proved beneficial; but he records that, given in conjunction with cod-liver oil, he has frequently observed a marked change for the better (p. 365). Dr. Churchill uses this testimony abundantly; and yet on page 141 we read that "one-half of the failures in the use of hypophosphites are owing to no other cause than their administration along with cod-liver oil. To a person who understands the

mode of action of these two remedies, their simultaneous use appears just as rational as would be the yoking together of a steam locomotive and a jackass." Either Dr. Churchill does not himself understand the mode of action of these two remedies, or Dr. Williams' results are by no means corroborative of his theory.

There is one other point which demands notice from a candid reviewer of this work, and we are sorry that we must conclude with a hearty condemnation of the last of Dr. Churchill's theories. In introducing the hypophosphites to the world, the discoverer had no intention, we fully believe, of making a property for himself; but when there arose a demand for them he became interested in the manufacture of these preparations, and has no doubt made a good thing out of the business resulting. This seems to us perfectly fair and honourable, and in reference to it we only remark that the doctor need not have taken such pains as he has done in the work before us to make himself and us believe that in the course he took he was actuated solely from a desire that the public should have the medicine in a reliable form. That is the old, old story. But to pass on. Dr. Churchill tells us that he has recently made a new discovery. It is an inhalant, which, if "the tissues are not anatomically disorganised," will cure "consumption, bronchitis, pneumonia, pleurisy, syphilitic phthisis, asthma, hay fever, whooping cough, laryngitis, whether simple, tubercular, or specific, loss of voice, sore throat, diphtheria, pharyngitis, simple, granular, or specific, and croup." He asserts this "deliberately" and most emphatically. Then, after a long dissertation on the rights of inventors, he says:—

I have not stated, nor do I intend to state, what these stoichiological inhalants are. I have come to this determination very sorrowfully and reluctantly, but resolutely and only after mature consideration. I think that in so doing I am acting for the best, not only for myself, but in discharge of the obligations which I, as an inventor, owe to society.

Dr. Churchill argues vigorously as to his "rights" in this matter. We are not careful to dispute these; but assuming for a moment the truth of his assertions, we ask what would he think of the captain of a ship who on the broad ocean should see a boatful of sinking, starving, shipwrecked sailors, and who should stipulate for the price of his services before he would throw a rope to help them. The case is exactly parallel, and if our author would justify such a deed, he may, with a clear conscience, maintain to the uttermost the theory which he so elaborately defends.

PUBLIC HEALTH.*

PUBLIC health receives only a small proportion of the attention which it deserves. Like time, we take no note of it but from its loss. Nations of extreme antiquity appear to have been wiser in their generation. Dr. Cameron, following the popular view of the subject, says: "The Jews have long enjoyed the inestimable advantage of a code of sanitary laws derived from a divine source, and implicitly observed for a period of 3,400 years by the great majority of that people. They have always suffered less than Christians during epidemics; and the comparative immunity of this 'peculiar people' from contagious and infectious diseases is evidently due to their habits of personal cleanliness, so imperatively enjoined by their religion." We must, however, go back to even more remote antiquity for the origin of their habits, for it is beyond doubt that Jewish sanitary laws were almost entirely derived from the ancient Egyptians, who were even more strict, and perhaps less superstitious, in many of their sanitary arrangements. It is to be regretted that personal and public cleanliness are such insignificant elements in the religions of most civilised nations. The State is obliged to do for us a great deal that religion did for the Jews; and it is doubtful if the State can do it as well. Dr. Cameron's book enables one to form some idea of the extent and nature of recent legislation on subjects relating to public health, about one-third of the volume consisting of sanitary statutes. The rest of the work refers principally to the carrying out of these statutes. We must not trust to officers of health alone in this work: a great deal must depend upon the public themselves, and Dr. Cameron's book is eminently calculated to diffuse the knowledge

* A Manual of Hygiene. By Charles A. Cameron, Ph.D., M.D., &c. Dublin: Hodges, Foster & Co.

which is at present so badly wanted. Before we can remedy our defects we must be aware of their existence. Too frequently a wide-spread ignorance of the evil results of many of our customs and arrangements is the greatest difficulty in the way of effecting an improvement.

In the chapter on nuisances we find—"Heaps of manure are serious nuisances. Their owners should be noticed to have them removed within twenty-four hours, and if they fail to do so proceedings should be taken to compel them to abate the nuisance. Ponds of stagnant water in yards or close to dwellings are clearly a nuisance." We are glad to learn that the public analyst and officer of health for Dublin holds this opinion, but what a pity it is that the public of that city take such a different view of the matter! The Irish metropolis has become proverbial for filth. We have seen some of the small streets, adjoining crowded thoroughfares, one continuous manure heap from end to end, except where stagnant pools intervened, the street being, in short, a public dust bin. And we have known the body of a dead cat to remain in a street for more than a week, when the disruptive influence of the traffic had incorporated the mangled remains of the deceased with the surrounding filth. Surely this is a form of nuisance that should not be tolerated for a moment; yet it appears to have become chronic in Dr. Cameron's city. This is a subject for the study of which Dublin offers unusual advantages, so it is to be hoped that in the next edition Dr. Cameron will devote a chapter or two to street nuisances and how they should be treated.

The very important subject of water has received a due amount of attention from the author; his remarks, however, are mainly of local interest. There are several interesting chapters on the atmosphere in its relation to health, zymotic diseases, and how the spread of them may be prevented, and on dietetics. There is but one chapter, of about twenty pages, on the adulteration of food and drink, a subject which we should have supposed deserving of more extensive notice in a work of this nature. But like many of our sanitary laws, those relating to adulteration are certainly in the most crude and imperfect state. We have yet to learn what adulteration is; and we have yet to see statutes designed to protect the public from the dishonesty of unprincipled analysts. There appears to be no limit to the amount of work which may be undertaken by public analysts, and no proper guarantee for the accuracy of the work, done for the most part by assistants. It is contrary to law to label an article as coffee which is really a mixture of chicory and coffee, but there is no law to prevent an analyst from affixing his well-known name to analyses made by his unknown assistants. He is responsible if it is true, but the interests concerned may easily prevent serious errors from being exposed. Chemical analyses are bought and sold, and our legislators should bear in mind that they are, at least, as easily adulterated as any other article of commerce.

The science of Dr. Cameron's book is not free from defects, which appear to have arisen from hasty writing. We find, for example, the existence of disease germs positively stated on one page, and questioned on the next. The popular error concerning the conditions under which aqueous vapour exists in the atmosphere is repeated; and pests are given for ozone which are quite untrustworthy. We hope the work will reach a second edition in which these defects will be remedied.

ANNALS OF PHARMACY.

THE "American Pharmaceutical Association's Proceedings" and the "English Year-Book of Pharmacy" reach us almost simultaneously. The main characteristics of both are similar, and consist partly in a report of the Papers and discussions which took place at the annual meetings of the respective societies, supplemented by a classified account of the progress of pharmaceutical investigation during the year, with abstracts of some of the most important Papers which have been published in the course of that period. Each volume has its excellences, and each perhaps its defects, but it is not our intention to contrast one with the other in detail, and in offering a brief notice of the two we couple them together merely because they lie before us at the same moment, and can hardly be separated.

The American volume contains about 650 pages, and presents as a frontispiece a beautifully executed steel portrait of the late Professor William Proctor, Junr. The meeting whose transactions are recorded in this volume was held at St. Louis, in

September last, under the presidency of Mr. J. F. Hancock, of Baltimore, and was reported in abstract in our journal of October. We shall not, therefore, further allude to it, except to respectfully submit that if there are no insuperable objections (and we see none) it would be a great convenience to readers if in the book, as in the meetings, the discussion on each Paper immediately followed the Paper itself. At present the Papers are all printed together, while the discussions are in a separate part of the volume. Besides the Papers read by individuals at the American meetings, committees are appointed who present reports on various subjects appertaining to the trade, and these are of course printed among the "Proceedings." Among these reports we may mention that on "On Adulterations and Sophistications," presented by Charles Rice, E. Scheffer, and T. N. Jamieson; "On Legislation," presented by Professor John M. Maisch; "On Unofficial Formulae," presented by John F. Hancock; and "On the Drug Market," by P. W. Bedford. These are all very interesting and useful. The rest of the volume is the "Report on the Progress of Pharmacy," by C. Lewis Diehl, and consists of abstracts gathered from all pharmaceutical sources, and corresponds to the Year-Book proper of the English annual.

The "Year-Book of Pharmacy," under the editorship of Mr. L. Siebold, is a worthy companion to its predecessors. A very important feature of the Year-Book is the Introduction, in which the pharmaceutical history of the year in its scientific aspects is summarised. This is a labour which requires very extensive knowledge and good judgment on the part of the editor, and it can only be written efficiently by one who lives in the study of his profession. Mr. Siebold considers that the pharmaceutical work of the past year, if not very conspicuous in a quantitative sense, is certainly of a very high quality, and will bear comparison with that of any previous year. He gives the first place to Dr. Hesse's "Researches into the Chemistry of the Cinchona Barks," but following this, in about sixteen pages, an amount of work is recorded and briefly described which undoubtedly justifies the editor's opening statement. Dr. Hesse's labours undoubtedly deserve the highest praise, both on account of the scientific ability which characterised them, and the importance of the subject. But we are not sure whether there is reason to place them so decidedly in front of all other investigations. "The Artificial Formation of Vanillin," by Messrs. Tiemann and Haarmann, is a result of laboratory work which is at least more striking, and which seems to point the way to more important discoveries. This is also described in the introduction.

Some more of the very excellent pharmaceutical work which followed the appearance of the Pharmacopoeia Appendix might, we think, have been recognised in this summary. We have also thought that the very important observation reported by Mr. Williams to the Conference meeting as to the effect of glycine in preserving the unstable solutions of hydrocyanic acid has not been sufficiently considered. Mr. Siebold, however, makes up for any slight omissions of this kind by his very careful study of German pharmaceutical literature, and seeing that so much information of real value reaches us from that country, we cannot but congratulate the Conference on having an editor so well able to present the chief points of interest to be gathered from its scientific literature. If the book is a shade above the average science of British pharmacists it is scarcely to be criticised unfavourably on that account. It is a most excellent compilation in all respects, and does credit to English pharmacy.

Literary Notes.

THE *Publisher's Circular* says that Messrs. Macmillan & Co. will publish, in the course of the spring, a work under the title of "The Unseen Universe; or, Physical Speculations on Immortality." It is said to be the joint work of two well-known physicists.

A "STUDENT'S DEPARTMENT" has been established in the *Canadian Pharmaceutical Journal*, and seems to create a fair amount of interest among the younger readers of that journal. We think we are not too eager in seizing on a compliment in assuming that this department has been modelled after our own "Corner."

THE "Directory of Export Merchant Shippers of London," published by Messrs. Dean & Son, has been considerably improved in this year's edition. The shippers of Birmingham, Wolverhampton, and Walsall are added, and it is proposed to include Liverpool hereafter. Besides giving the names and addresses in alphabetical order, this very useful book classifies the mercantile world according to the countries shipped to, and again according to the class of goods exported.

Among the new books of the month may be mentioned Mr. M. C. Cooke's "Fungi: their Nature, Influence, and Uses," which forms the new volume of Messrs. King's International Scientific Series, price 5s. Messrs. Longmans issue the first part of Professor Turner's "Introduction to Human Anatomy," price 6s. 6d., sewn. A "Dictionary of Pure and Applied Chemistry," somewhat after the style of our "Watts," is being published in French by Hachette & Cie., edited by M. Wurtz. The work will be completed in 22 parts, of 160 pages each. Each part is sold for 34 francs.

THE "Analyst's Annual Note-Book," compiled by Sidney W. Rich (20 Exeter Street, Strand) is a neat and useful summary of the analytical processes recently brought forward. It seems it is intended to appear annually; and that it will prove of service will be evident from the fact that it gives under one heading a summary of the various notes which, respecting that article, may have appeared in divers places during the year. Under "Butter," for instance, the statements of Dr. Campbell Brown, Mr. Wanklyn, Mr. Bell, Mr. Murphy, Mr. Cameron, and Mr. Allen are condensed and consecutively presented.

A THIRD EDITION of Dr. Scoresby-Jackson's "Note-Book of Materia Medica" has appeared, edited by Dr. Angus Macdonald. Of course the new articles and preparations of the Pharmacopœia Appendix are now incorporated in the work. The title *Note-Book* is hardly explicit enough; the work is as much a manual as any other, and, in respect of the remarks on the therapeutic value and employment of each drug, it holds a particularly high rank. Its pharmaceutical explanations are brief but luminous; but it is especially in its notes on the medicinal uses of the Materia Medica that this treatise has won its reputation.

"FIRST LESSONS IN BUSINESS MATTERS," by a Banker's Daughter (McMillan), is a little shilling primer, with information in it which assuredly everyone ought to know, but the bulk of which we should suppose everyone does know. The authoress gives a very minute description of the method of drawing a cheque, remarking, for instance, that some people write the figures thus; 13/10/6; while others write them thus—13: 10: 6. The difference is surely a very subtle one. Some other information follows respecting the investment of money, and a few financial terms are explained. The lady has apparently recorded the few little items of banking business which she has casually noted, but these are so vague and so disconnected that she was not justified in publishing them under the misleading title of "First Lessons in Business."

AN ATTEMPT to trade on the anxiety of pharmaceutical students, and which according to Parliamentary philology may fairly be described as "disreputable," has been brought under our notice. It appears as No. 1 of the "Students' Vade Mecum," price 6d. weekly, or 1s. 10d. monthly. It contains 12 octavo pages, and professes to give lessons on chemistry, botany, &c. They would be the last lessons that we should recommend. A special feature of the scheme is the offer on the part of the editor to answer questions on the several subjects of study. He offered to reply to six questions per week on either subject at the rate of 21s. for six months, each subject. We can scarcely suppose that the proprietors of this precious enterprise will net many guineas, nor, for the matter of that, many shillings; but in case any reader should be thinking of remitting, we may mention that we sent to University College, Gower Street, where the "editor" is supposed to reside, and learned that several communications had been received there for that person, but that he was not known and had not then applied for them.

WE HAVE received from Messrs. Smith, Elder & Co. a "Commentary on the British Pharmacopœia," by Dr. Walter G. Smith. Our first idea on looking at the title-page was that such a work was superfluous among the numberless treatises which radiate from that inexhaustible treatise, the British Pharmacopœia. But we soon found reason to alter our judgment,

and a careful inspection of the work induces us to express a very warm opinion of its merits. The author treats on every substance and preparation mentioned in the Pharmacopœia, including the recent additions, and on each he gives us an article which is both interesting and instructive. We know of no work so well calculated to explain the Pharmacopœia, and at the same time to make its study attractive. The history, chemical or botanical features, and medicinal uses of each medicine are well set forth; and we would note as an especially pleasing characteristic that the etymology of the names of drugs is in all cases given where it is possible. This we are an exceedingly useful method of fixing the subject on the mind of the student. We recommend this work very cordially.

MESSRS. SAMPHSON LOW & Co. have just published a third edition, with considerable additions, of Mr. Hain Friswell's "Familiar Words," the most extensive collection of quotations from English authors which has been published. By means of this very carefully compiled collection it is possible to trace to their original authors most of the phrases and sentiments which have become a part of our daily literature and conversation. For example, if anybody wants to know where Dr. Kenedy got his famous sentence from, he will find it on page 9 as a quotation from *Troilus and Cressida*, act iii. sc. 3, "And, like a dewdrop from the lion's mane, he shook to air." The compiler has occasionally shown a little perversity in the classification of his quotations, as, for example, when he gives Young's line, "We take no note of time but from its loss," under "Take." Any other million compilers would have put that sentence under "Time." Again, the passage from the *Merchant of Venice*, commencing, "The quality of mercy is not strained," is grouped not under "Mercy," though one could scarcely conceive any other title, but under "Rain," of all words in the world! A verse on page 344 is quoted from O. W. Holmes' "Biglow Papers." This must be an accidental oversight, as every one knows that the author of "The Biglow Papers" was Mr. Russell Lowell. These are but accidents, however, amid many thousands of quotations correctly given and judiciously classified.

HOMEOPATHIC LECTURES.

AS we announced last month, courses of lectures have been instituted by the British Homeopathic Society, and are now in progress of delivery at the London Homeopathic Hospital. Dr. Dudgeon gave the first two, expounding the principles on which homeopathy as a system rests. Dr. Richard Hughes then opened his course on *Materia Medica* and *Therapeutics*. These lectures are being delivered every Thursday afternoon, and any gentleman connected with the medical profession is at liberty to attend them. At this moment it is not our purpose either to report or criticise the lectures; but we notice in connection with them a display of professional littleness which it is difficult to understand or account for. The *Homeopathic Review* says that advertisements of these lectures were offered to the following medical journals:—*Lancet*, *Medical Press and Circular*, *British Medical Journal*, and *Medical Times and Gazette*. The two first-named journals inserted the advertisement; the others declined it as "unsuited to their columns." A correspondent of the *Lancet* appears to have remonstrated with the editor for having published this announcement. The latter, in reply, says:—"We do not see that we could in fairness close our columns to such advertisements, or that any good would accrue from it if we did." This is sensible and straightforward; but the course pursued by the two papers which refused the advertisement seems to us to be neither. At any rate it gives the homeopathic organ fair opportunity for the retort that "the editors of these papers have not the courage of their opinions. They have, as we have shown, persistently misrepresented homeopathy. For their readers to have, through their columns, the knowledge of a place where their misrepresentations will be exposed, where the real character of homeopathy may be learned, is perhaps too much to expect from writers of this sort. They dare not put such an opportunity within the reach of their readers. They cannot afford the risk of their knowing the truth. The hollowness of the diatribes respecting homeopathy that they have allowed to appear in these papers would be made clear to them, and they therefore refuse to let them know where the truth may be learned."

LEAD PLASTER.

A PAPER on the formulae for the preparation of lead plaster was read by Mr. Umney at the last Pharmaceutical meeting. The object of the Paper was to advocate a process similar to that of the P. L., 1851, in preference to the present official formula. The P. L. process ordered about 64 parts of litharge to 100 parts of olive oil; that of the P. B. ordered 43½ parts of litharge to 100 of olive oil. Plaster made by the latter formula, Mr. Umney urged, left free olive oil, and was thus greasy, and liable to rancidity. Mr. Umney said that the wholesale houses had found that emp. plumbi prepared according to the B. P. process produced complaints from their customers. He had sent samples to various pharmacists, distinguishing the two by letters, but not by any indication to show the process by which they had been made. Six gentlemen expressed their preference for the P. L. plaster and only one for that prepared after the P. B. process. The formulae of foreign Pharmacopœias were all stronger in litharge than that of the P. B., "and (Mr. Umney added) from inquiry I have made, not only in London but in other cities, I find that emp. plumbi is seldom made on a large scale by the official formula for druggists' use, but that from 50 parts to 60 parts of litharge to 100 parts by weight of oil is more generally adopted, and that in no case (as far as I have been able to ascertain) do the manufacturers of the adhesive plaster of surgery and trade, which is spread in hundreds of thousands of yards annually, use the lead plaster of the British Pharmacopœia." Mr. Umney concluded that the simple formula of

Litharge	..	..	..	..	..	..	one part
Olive oil	..	..	..	..	..	..	two parts

would be the best under all circumstances for our national Pharmacopœia.

A good discussion followed the reading of this Paper.

Mr. HASELDEN had noticed that in the summer the plumbic plaster of the B. P. was always sticky.

Mr. GERRARD had made some hundredweights of lead plaster and spread some thousands of yards, and he much preferred the P. L. form to that of the B. P., though he found it best to use a little more oil than the London Pharmacopœia directed, otherwise the plaster was a little too liable to crack. He would also suggest that more attention should be paid to evaporation in making the plaster, though when the wholesale trade could get 10z. a pound for water they were hardly likely to carry the evaporation further than they did at present.

Mr. MARTINDALE did not agree with Mr. Umney. He had found the best results from the B. P. process. If well finished, in other words, thoroughly freed from glycerine and water, the B. P. plaster was not too sticky.

Professor REDWOOD stated that the new process had been decided upon by a committee, among whom were Mr. Henry Deane, Mr. Peter Squire, and Mr. Thomas Herring. The formula adopted was supposed to be that of a well-known manufacturer who had a high reputation for adhesive lead plaster. It was thought that a considerable improvement had been made, and he (Professor Redwood) was not prepared to concede that the committee had made a mistake without further evidence than Mr. Umney had given, though he freely admitted that Mr. Umney's experiments were very valuable. Professor Redwood also pointed out that to make a good lead plaster it was necessary to use the finest Italian oil.

Mr. WELLS had had considerable experience in the manufacture of lead plaster, and had found that more depended on the quality of the litharge than on the oil. He could never make a satisfactory plaster with bad litharge and good oil; but with good litharge he could make a splendid plaster, even with Gallipoli oil. He had also found it desirable to use a much larger proportion of litharge than that employed by Mr. Umney. His proportions were 20 parts by weight of litharge and 25 parts of oil. It was very important to remove every particle of water and glycerine. By long continued boiling and letting the plaster solidify during the night the glycerine could be removed, and then the plaster should be heated up again. By this means he had produced the best plaster.

Mr. Moss had only made plaster by the B. P. process, from which he had obtained excellent results. The house with which he was connected continually sent it out and did not receive complaints.

Mr. UMNEY, in reply to Mr. Gerrard, said that there was not much desire to leave water in the plaster, as he took 100 lbs. of oil and 53.8 lbs. litharge, and the plaster produced weighed only about 156 or 157 lbs. In reply to Mr. Martindale, he said he had spread some of the P. L. plaster six months since and it showed no sign of cracking. He added that in all his experiments he had employed the very finest oil that could be obtained.



CHEMISTRY OF THE TAR ANTISEPTICS.

TO THE EDITOR OF "THE CHEMIST AND DRUGGIST."

SIR,—In THE CHEMIST AND DRUGGIST of last month a letter appears by Mr. C. Lowe, which contains some strictures on a Paper of mine "On the Chemistry of the Tar Antiseptics," published in your January issue. I should not have noticed a communication so manifestly biased were it not that the statements made therein, whilst presuming to correct error and convey correct information, are in reality of a most careless and unguarded character.

Mr. Lowe states that I began by giving a much too general outline of the process of coal gas tar distillation. In other words, if Mr. Lowe had had the conduct of the Paper he would have occupied the time of the evening with discursive or needless details upon matters of secondary importance. My time being limited to something under one hour, it was necessary (and sufficient for the purpose) to give most of the processes in outline only, and Mr. Lowe's insinuation that the phenol I described might contain various impurities is not consistent with the words I used, and is, I fear, suggested by something other than a desire to convey correct information. Several other instances occur where the ideas objected to are not found in the words I employed. Mr. Lowe builds a structure of imaginary errors by spelling me backwards a little, and then manfully charges at them and dissipates them. Of this character is the charge that I claim the merit of having discovered pure carbolic acid, because I recommended a name less misleading than the term acid. The phrase "absolute phenol" was proposed and the granular form of this product suggested by me as likely to prove useful, and the suggestion has been sufficiently justified. To the discovery of pure carbolic acid I made no claim, for the reason (sufficient for me) that I did not discover it. The idea is not suggested by my Paper, but is the offspring of Mr. Lowe's eager invention. Mr. Lowe, for the most part, avoids the actual subject of the Paper, and points to the absence of detail in matters that are only briefly described; he objects to my process for preparing rosolic acid, and states that the greater portion of the phenol is not present as sulphophenic acid. I can only say, if Mr. Lowe does not bring the greater portion of the phenol into that form he works in a crude and wasteful manner.

My statement, that rosolic acid could be obtained in a crystalline form from the aurine of commerce when freed from (not "by the removal of," as Mr. Lowe misquotes) excess of phenol is described as incorrect. Without desiring to give the "reply chirlish," I must simply repeat my statement. I referred at Liverpool to Messrs. Dale and Schorlemmer's Paper for the details, which, as in other cases, it was impossible to enlarge upon. With reference to the non-formation of rosolic acid under the conditions described by Smith and Jourdain, I accept the more recent results of Caro.

Mr. Lowe is also querulous on the process given for producing picric acid, although it is strictly accurate; but, for reasons already given, the modifications and minutiae necessary for economic production on a manufacturing scale were not described in detail.

Mr. Lowe touches the actual subject of the Paper when he treats of my description of pure phenol, and volunteers "correct information" as follows—I state that the boiling

point of pure phenol is 184°C ., whilst Mr. Lowe states it to be 182° , and further adds that these two degrees of boiling point indicate a material impurity in the acid boiling at 184°C . In another place Mr. Lowe refers to Messrs. Dale & Schorlemmer as trustworthy authorities, and I should be equally willing to accept their statements on a scientific point. In the *Journal of the Chemical Society* for 1873, p. 441, these gentlemen, in speaking of their experiments on aurine, say, "We therefore prepared the colouring matter from pure phenol, boiling quite constantly at 184°C , and melting at 42° , a large quantity of which was kindly placed at our disposal by Messrs. Charles Lowe & Co." Mr. Lowe's anxiety to frame an objection has seated him on this dilemma—either he must admit 184° to be the correct boiling point, or that his pure phenol contains a material amount of impurity.

With reference to the non-deliquescence of pure phenol, Mr. Lowe states that pure phenol attracts moisture from the atmosphere like pure cresol, the hydrate in the one case being solid, and in the other case liquid at ordinary temperatures. As a matter of fact, the two bodies present a marked contrast in their avidity for water, cresol attracting moisture from the atmosphere very rapidly, and phenol with extreme slowness.

Mr. Lowe would have written in much better taste had he omitted the paragraphs in which he seeks to disparage the products of other manufacturers.

The above remarks, which include all the objections enumerated, will enable your readers to estimate the value of Mr. Lowe's critical method, which would doubtless be more effective if it were rather more guarded and less impetuous.

W. E. BICKERDIKE.

TO THE EDITOR OF "THE CHEMIST AND DRUGGIST."

SIR,—In your journal of February 15, there appears a letter signed "Chas. Lowe," purporting to be a criticism of a Paper read before the Liverpool Chemists' Association by Mr. W. E. Bickerdike, "On the Chemistry of the Tar Antiseptics." In this letter the following paragraph appears:—

"Mr. Bickerdike's partner, Mr. Bowdler (a chemist for some time in the employ of the late Dr. Calvert), should have been able to give him more correct and extended information with regard to pure carbolic acid and its properties than is displayed in his Paper."

I have carefully perused the Paper of Mr. Bickerdike, and as your readers will note, no reference whatever is made to my name or to the name of our firm, which appears to have been studiously avoided by Mr. Bickerdike, and very properly so, as it was given at request and not for trade purposes. Mr. Chas. Lowe (like myself, a chemist formerly in the employ of the late Dr. Calvert, as he chooses to express it), is, therefore, making an unwarrantable use of my name in thus introducing it into his letter.

With the Paper of Mr. Bickerdike I have had nothing whatever to do, and as he is well qualified to reply to Mr. Lowe's insinuations, I have no doubt he will do so.

Mr. Lowe having referred to my connection with the late Dr. Calvert, I may add that, having had the management of the works of Messrs. F. C. Calvert & Co. in my hands, I am acquainted with the growth and development of this branch of manufacture, and it would have given me some satisfaction to have read the generous admission of Mr. Lowe, that pure carbolic acid "is well known in the trade, being manufactured by our firm (C. L. & Co.) and that of F. C. Calvert & Co.," were I not informed that Messrs. Lowe & Co. have recently acquired the name and use of the works of Messrs. F. C. Calvert & Co.

Mr. Lowe further says that a full description of the product and process of its manufacture was published simultaneously by the late Dr. F. C. Calvert and himself in 1867; but Dr. Calvert had already, in 1865, published a Paper, which appears in the *Chemical Society's Journal* for that year, "On a Crystallised Hydrate of Phenyl Alcohol," in which, singularly enough, no reference whatever is made to Mr. Charles Lowe, and yet this preparation of a crystallised hydrate and its subsequent purification is the subject of C. L. & Co.'s specification, dated April 24, 1874, and constitutes "the letters patent" to which he refers.

My attention has recently been drawn to a printed price list of Messrs. F. C. Calvert & Co., dated October 1, 1872, to which has been added a note in red ink, dated January 1, 1875, to the effect "that pure carbolic acid can only be obtained from F. C. C.

& Co., as the manufacture and sale of this product is fully protected by patent and trade mark."

As the purpose of this is so manifest and calculated to mislead, I may state for the information of your readers that I know of no bar whatever to prevent any person from carrying on the manufacture of pure carbolic acid if they can do so with any profit and can supply a satisfactory product.

We have done this for the last seven years according to the process of the late Dr. Calvert, with such modifications and improvements as experience has suggested.

Perhaps the fact that the manufacture of some considerable quantity of carbolic acid has been placed in our hands may account for this unnecessary attack upon myself; if so, I would simply commend to Mr. Lowe's attention, what is applicable to business as well as to life, namely, Darwin's doctrine of "the survival of the fittest."

ARTHUR C. BOWDLER.

Church, March 6, 1875.

THE HISTORY OF THE LONDON PHARMACOPŒIAS.

TO THE EDITOR OF "THE CHEMIST AND DRUGGIST."

SIR,—It would seem that there must be some considerable mistakes as to the number of the editions of English Pharmacopœias.

Mr. Savage, the President of the Brighton Association of Pharmacy, has given a list of fourteen editions, from the first that was published, in 1618, to the present time. Dr. Paris, in his "Pharmacologia" of 1843, gives a list of nine; but if we add those of 1851, 1864, and 1867, they would make the number twelve. Mr. Savage's list includes all of Dr. Paris's, except that of 1677, and contains, in addition, those of 1627, 1685, and 1697. But, singularly enough, the Library of the Pharmaceutical Society possesses no less than eight London Pharmacopœias, not included in either of the lists I have quoted; viz., 1659, 1668, 1763, 1682, 1724, 1763, 1788, 1815. I also know of another of 1632. If we add these to Mr. Savage's list, and the 1677 of Dr. Paris, there would be twenty-four editions; and I doubt very much if these are all that have been published.

But, assuming the above to be correct, and that they all represent different editions—it is just possible that some may be reprints—it would reduce the longest interval between any two to twenty-four years, against Mr. Savage's forty-one, and the average to a little more than ten years, as against his (nearly) eighteen; so that the College of Physicians would not appear to have been quite as cataleptic as Mr. Savage has imagined.

Maidstone.

W. R.

THE APPOINTMENT OF TRADESMEN AS PUBLIC ANALYSTS.

TO THE EDITOR OF "THE CHEMIST AND DRUGGIST."

DEAR SIR,—I have often thought I should like to have your opinion as to the fairness or otherwise of appointing chemists engaged in trade as public analysts.

I have from the first been strongly of opinion that purely professional men alone were fairly eligible for this post; for what must be the inference in the public mind when from among the dealers in most of the articles coming within the provisions of the Adulteration Act, one of their number is selected as the judge and arbiter of what is pure, good, and wholesome in articles of food, drink, and medicine? Why, surely that the appointing body was so confident of the perfectly reliable character of this gentleman's wares as practically to exempt them from the cognisance of the Act altogether, in order to obtain his services as adviser in estimating the value and purity of his brother tradesmen's goods. So satisfied have I been of the utter invidiousness of appointing trading analysts, that I have almost made up my mind to sound one or two Members of Parliament on the subject; but in the meantime I should be happy to have your opinion in the matter.

I am, yours very respectfully,
FAIRPLAY ALL ROUND.

February 16, 1875.

MILK OF SULPHUR AND SULPH. PRÆCIP.

TO THE EDITOR OF THE "CHEMIST AND DRUGGIST."

DEAR SIR,—We have received a letter from Messrs. Simpson & Burrell, solicitors, 20 Albion Street, Leeds, the solicitors engaged by Mr. Hellowell, of Leeds, in defence of the charge brought against him on the 3rd inst., "for selling on the 19th of January half a pound of milk of sulphur, the same being adulterated with sulphate of lime to the extent of 53 per cent.," as reported in the local papers, and in the *Pharmaceutical Journal* of February 6, 1875 (page 635), and in *THE CHEMIST AND DRUGGIST* of February 15, 1875 (page 54).

As the case is of importance to the trade, we beg to send you a copy of Messrs. Simpson & Burrell's letter.

We are, yours respectfully,

HIRST, BROOKE & HIRST.

Leeds, February 16, 1875.

[COPY.]

20 Albion Street, Leeds, February 15, 1875.

GENTLEMEN,—As the Corporation officials appear determined to continue the prosecution of chemists for the sale of milk of sulphur, and as some of them may be involved in doubt as to the course they should pursue, we would suggest that the wholesale druggists should advise his customers not to sell it without attaching a label declaring its mode of preparation.

The words at foot would suffice for the label.

We are, gentlemen, yours truly,

SIMPSON & BURRELL.

Messrs. Hirst, Brooke & Hirst, Wholesale Chemists, Leeds.

MILK OF SULPHUR.

Lac Sulphuris, not Sulphur Præcipitatum.

Trade Memoranda.

MR. R. DODMAN, chemist and druggist, Enfield Highway, has disposed of his business to Mr. J. Hicks, late of London.

MR. NICHOLSON, of Aylsham, Norfolk, has succeeded to the business carried on nearly half a century by Mr. Cuppis, of Diss.

MR. J. C. CHUBB, manufacturer of seedlits and violet powders, has removed from St. John Street to more commodious premises at 29 Old Street, E.C.

MR. ROGER HUGHES, of Park Road, Liverpool, has taken into partnership Mr. T. M. Bannister, lately of Burnley. The business is now conducted under the style of Hughes & Bannister.

MR. ROBERT FOURACRE, chemist, Taunton, has left England for Australia, and is succeeded by Mr. J. Proctor, of Birmingham, formerly of Barnard Castle, Yorkshire.

MR. E. C. PERKS, of 30 Conduit Street, W., wishes us to state that he is in no way connected with the firm of C. E. Perks & Co., of Hitchin, perfumers, whose liquidation was reported in our last issue.

THE WELL-KNOWN firm of Frankau & Co., importers of leeches, sponges, and cigars, are about to remove from Lime Street to 30 Gracechurch Street, where they will have good warehouses and show rooms.

IN MESSRS. SOUTHALL BROS. & BARCLAY'S Price Current for March there is inserted a page of "Hints on the Selection of Drugs." The publication of these "Hints" on various subjects connected with the trade in a price list is both novel and useful, for the remarks are in all cases valuable and not always universally known.

MESSRS. LAWRENCE & Co., 485 Oxford Street, the proprietors of "Brodie's Miraculous Cure for Croup," write to us to say that its sale is gradually spreading over the Continent, and that in answer to numerous inquiries, they wish it to be known that it is now put up for sale with directions for use in every European language. It is also specially prepared for the Indian market, or for sale in other warm climates.

MR. SLACK, of Stockport Road, Manchester, prepares a combination of cod liver oil with hypophosphite of lime. It is a perfect emulsion, containing half its bulk of the oil and two grains of the salt in each tablespoonful. Dr. C. J. B. Williams is the chief authority for prescribing these remedies in association, and his experience goes strongly to support the value of such a combination. That, however, is a subject beyond our judgment.

DR. DUN'S CAPSULES.—These capsules, manufactured by Mr. R. T. Dun, of Glasgow, are distinguished from others by the gelatine being always soft and flexible, and thus presumably being more readily soluble, and, in the case of certain medicines, forming an emulsion which is more easily assimilated than would be the drug in its raw state. We have some samples of Mr. Dun's capsules before us, and they are certainly to be noted for the excellence of their manufacture.

A PROSPECTUS has been issued to manufacturers of chemists' articles, announcing the formation of an association whose business it will be to supply direct to the retail trade the products of the members of the said association. It is intimated that the wholesale trade at present gets too much profit for acting between the maker and the retailer, and this association promises soon to issue a catalogue to every chemist in the United Kingdom, showing a reduction of every member's articles as compared with other lists. We publish no name or address, because the circular shown to us is marked "confidential." We are at a loss to understand, however, why a business enterprise of this kind should need to be kept so strictly private, unless the proprietors are like the reduced lady who had to sell oranges, but hoped no one would see her.

LUBRICATING OILS.—Messrs. Duncan Bros., Gresham House, Holborn Viaduct, have asked our attention to some samples of their cheap lubricating oils, and these seem to us quite worth the attention of dealers. The best of these is a substitute for sperm oil, and is certainly a very fine and useful product. It is of a very pale colour, free from smell, and in work is said to possess lubricating properties fully equal to those of oils sold at from 5s. to 9s. per gallon, and to be quite free from gummy or clogging matter. This sells at from 3s. 6d. to 4s., according to the quantity taken. The other oils prepared by this firm are of lower price still, touching 2s. 3d. for the lowest. The difference consists in the various degrees of refinement. Messrs. Duncan Brothers arrange to supply first orders on sale or return, if such is desired by new customers. This may be worth consideration in districts where machinery oil is much called for.

WE NOTICE the establishment in Dublin of a new firm on a somewhat extensive scale, and under the title of "Warren & Co." The principal, Mr. J. V. Warren, who is well known in the drug trade both in England and Ireland, is a gentleman who would infuse life into the deadest of concerns, and with the management of a new business in his hands he is quite certain to awaken echoes from end to end of the beloved isle. Besides manufacturing Fluid Annatto and Sweet Essence of Rennet, Messrs. Warren & Co. are the sole Irish representatives of the following London firms:—Messrs. Davy, Yates & Routledge, wholesale druggists; Messrs. Lynch & Co., druggists and sundries; Messrs. Dietz & Co., chemists and makers; and Messrs. Henry Brooks & Co., manufacturers of stationery cases. Their warehouse and offices in Dublin are at Beresford Place, where samples will be kept.

A NOVEL and very handsome pharmacy has just been completed by Messrs. Stickland & Rowe at South Kensington, close to the Metropolitan Railway Station. The fittings are in oak and rosewood, a combination which produces a quiet but rich effect. What is particularly worth noting in this establishment is the advantage obtained by a new arrangement of counters. The retail counter is on a level a few inches higher than the front of the shop, and the dispensing counter is on a higher level still. The former is a straight counter, and the latter is curved, the concave side facing the shop. Obviously, by this arrangement a very convenient space is secured behind the counter, while the dispensers get a large increase of space. The cases of bottles, &c., being also fixed on a similar curve behind the dispensing counter, a most imposing appearance results. Every detail of this elaborate pharmacy has been executed by Messrs. George Treble & Son, in a style which entitles them to the utmost credit.



AN ADVERTISING ACCOUNT.

At the Court of Exchequer, on the 22nd ult., before Baron Pigott and a special jury, an action was brought by Messrs. Smith & Son against Mr. Dudgeon, a chemist and druggist, of Bristol, for advertising some pectoral balsam and family pills at several stations of the Great Western Railway Company, including Bristol, Bath, Weston-super-Mare, Clifton, &c., on the terms of 18s. a year, and a contract, partially printed, was produced, containing the defendant's signature, and extending over five years.

The action was for 22l. 10s., being a year and a quarter's account. The defendant alleged that he had positively refused to enter into a contract for more than a year, and that the paper he had signed was folded when he signed it, and that he was unaware of its contents.

Sir H. James, Q.C., and Mr. Willis were counsel for the plaintiffs; Mr. Cole, Q.C., and a junior for the defendant.

The evidence being concluded, Sir H. James rose to reply on the part of the plaintiffs, but the jury interposed, observing that their minds were made up, and returned a verdict for the amount claimed.

Sir H. James then stated that the action was brought before his lordship and a special jury for the purpose of vindicating the character of their employé, Mr. Bentley, in whom they had the greatest confidence. That being done by the verdict, he was instructed to say that Messrs. Smith would themselves bear the cost of the special jury.

The judge thought the offer was a very handsome one. The plaintiffs were naturally anxious to have a matter so seriously affecting the character of one of their agents tried by a special jury, although the pecuniary claim was comparatively trifling.

TRADE MARK RIGHTS IN PATENT MEDICINES.

A CASE of some importance in reference to the property in patent medicine titles, or any similar property, was argued before Vice-Chancellor Hall on the 4th inst. The plaintiff was Mr. John Smith, chemist and druggist, Lincoln, who is the proprietor of a mixture for the cure of coughs, colds, &c., known as "Pectorine." The defendant was Mr. Mason, also a chemist and druggist, at Rotherham. From the plaintiff's bill of complaint it appeared that he invented and introduced to the public a cough mixture, to which he gave the name of "Pectorine," a name which had never before been applied to any medicinal preparation. On January 7, 1873, he registered at Stationers' Hall a label for the preparation, which was described as "Smith's Pectorine," and under this name it was advertised in Lincolnshire and adjacent counties, and also in THE CHEMIST AND DRUGGIST. By means of such announcements, and owing to its valuable properties, the cough mixture acquired a considerable reputation and a large and regular sale throughout England. In October, 1874, the label was altered by plaintiff to "Pectorine" only. In November, 1874, the plaintiff discovered that defendant was manufacturing and selling a cough mixture by the name of "Pectorine," and he thereupon instructed his solicitor to write to defendant warning him against doing so. The defendant replied that he had never heard of any other "Pectorine" than his own; but it was shown that he was for some time previously aware that plaintiff was the proprietor of a cough mixture known as "Pectorine." As he persisted in selling his preparation as "Pectorine," plaintiff filed a bill in Chancery, praying that he might be restrained. Mr. Dickinson, Q.C., and Mr. Kekewich appeared for plaintiff, instructed by Mr. H. K. Hebb, of Lincoln, and defendant was represented by Mr. Karslake, Q.C., and Mr. Joyce.

The case occupied the whole of the day, and was argued by

the learned counsel on both sides in the most exhaustive manner, the issue being regarded as one affecting the whole question of trade marks. The Vice-Chancellor, in an elaborate judgment, said the question to be determined was a reasonably simple one. It was clear that the plaintiff had invented the name first, and it had been shown that he had registered it as "Smith's Pectorine" on January 7, 1873, and again as "Pectorine" only on October 24, 1874. He (the Vice-Chancellor) had no reason to doubt the defendant's statement that he also had invented the same word. On September 16, 1874, the defendant registered a medicine as "Pectorine," which preparation, as well as the name, it seemed, was his own invention, although it appeared that on September 15 he was aware that the plaintiff claimed the name of "Pectorine." The defendant claimed it also. The question now to be determined was whether defendant was entitled to use the name. One portion of the defence was that the word "Pectorine" was not capable of being appropriated as a trade-mark at all. But that it had, or would have, or might have, some special advantage was manifest from the anxiety which defendant himself showed to prove himself the inventor. It appeared to him (the Vice-Chancellor), as to the name, that it was not a question of law, but of the ordinary understanding of mankind, whether or not the use of the word "Pectorine" for the first time applied to a particular article was a fanciful name. He considered it was a fanciful name, as nine-tenths of the purchasers of the article would probably not know the meaning of it. As to the defendant knowing that the name belonged to plaintiff, that was upon many authorities quite unimportant. It was a misfortune that he should have hit upon that particular name, a misfortune which might have weight in settling the question of costs, but which could not take from the rights of the plaintiff, and the name, according to the more modern authorities, was a property belonging to the plaintiff. The Court, having arrived at that conclusion, had only to ask itself this question—If this article is ordered by that name, will or will not the plaintiff be damaged by that being done? The question could only be answered in one way, namely, that the plaintiff would be damaged if orders were given for the article by that name, and those orders were liable to be executed by supplying the article manufactured by the defendant under exactly the same name. Then it had been said that the name was originally "Smith's," joined on to the name of "Pectorine," and that nothing short of using the whole description would be calculated to deceive; but this was not a correct view. The public understood it to be "Smith's Pectorine," but it did not follow that in every case where "Pectorine" was ordered by anybody who required to use it that it would be obtained by the retail agent from the original proprietor and vendor, Mr. Smith, at Lincoln. He (the Vice-Chancellor) had said that knowledge of the plaintiff's title was unimportant, and it seemed very unimportant for any other purpose now, because he still claimed the right to use the name. After referring to several cases bearing upon the issue, the Vice-Chancellor said that a person having a name as his property had a right to protection in respect of it. Patent medicine vendors, as a rule, began with small beginnings, but in those beginnings they originally acquired the protection of a trade-mark. The plaintiff was perfectly entitled to the protection of the sale of his article, even at Rotherham, where, notwithstanding the defendant's medicine had had the start, he seemed to be getting a business as well as at other places. Therefore, he (the Vice-Chancellor) could not come to any other conclusion than that the plaintiff had made out his case for the protection which he asked, and he would accordingly grant an injunction forthwith.

THE USE OF AN APOLOGY.

SOME months back the Apollinaris Water Company prosecuted an asserated water manufacturer named Eugene Fisher, of Camberwell, for misdeameour, he having sold as Apollinaris water some water artificially prepared. Mr. Fisher signed a very full apology and consented to its publication, whereupon proceedings were withdrawn. But no stipulation was made as to the extent to which the company should avail themselves of this apology. The Apollinaris Water Company has since been advertising this apology daily, and seemed likely to continue so doing till the end of time. Mr. Fisher therefore objected, and ultimately filed a bill in Chancery. To this bill the company demurred, and the case was heard before Vice-Chancellor Malins, on the 25th ult.

In his judgment the Vice-Chancellor said that by accepting the apology the defendants had admitted the truth of the plaintiff's assurance that he had sold the water without knowing it to be spurious, and they had certainly extracted sufficient exculpation for the offence. The apology was made and accepted, and when Fisher made it it was no doubt within his intention and contemplated by him that the defendants would advertise it; but the defendants were bound to make a fair and reasonable use of it, whereas they continued to advertise it daily from December 16. Were the defendants to be permitted so long as they existed as a company daily to parade the plaintiff in this manner before the public? No doubt they would be justified in inserting the advertisement in question several times, and perhaps at intervals; but to insult the plaintiff every day in this manner was not reasonable or proper. The principles of law applicable to this case were plain. A man expiated his offence by undergoing his sentence, and, when he had complied with it, nothing could be more improper than to throw his offence every day into his face. The Vice-Chancellor considered that, the apology having been given and accepted, the defendants were bound to use it in a reasonable manner, and not in an oppressive manner, and so as to render it impossible for the plaintiff to carry on his trade; that, inasmuch as they had compounded a misdemeanour, the defendants could not turn it to their own advantage; and that they must have known how trivial the offence was, for his Honour took it upon the face of this bill that the plaintiff himself thought he was buying genuine water and was as much imposed upon as anybody else. On every ground, therefore, he should overrule the demurrer.

LONDON BANKRUPTCY COURT.

R. VERITY, Chemist, 35 Warwick Street, Regent Street.

The debtor had filed a petition for liquidation, and at the meeting of his creditors a statement of affairs was submitted showing liabilities, 2,468*l.* 1*1s.* 2*d.*, and assets 100*l.* A composition of 6*s.* in the pound, payable by instalments extending over a period of five years, was accepted, and a sitting was recently held before Mr. Registrar Keene, for the purpose of registering the resolutions.

Mr. Geoghegan, who appeared for the debtor, said that he had met with a series of misfortunes, but intended to pay the composition he had offered out of the profits obtained by his future exertions.

His Honour, after some consideration, allowed the resolutions to be registered.

F. T. FAUCHEUX, Chemist, 96 Southampton Row.

In this case two meetings of creditors had taken place without a trustee being appointed, in consequence of the non-attendance of a quorum, and the facts were accordingly reported to the Court. The report came on for consideration before Mr. Registrar Roche on February 23, and Mr. Aldridge, as official solicitor, stated that no accounts had been filed. The bankrupt appeared to have been largely concerned in speculative transactions. Mr. J. R. Bailey, on behalf of the petitioning creditor, said that negotiations for a settlement were in progress, and he asked that the matter might be adjourned. Possibly the bankruptcy would be annulled. In reply to the Registrar, the bankrupt stated that he did not know what creditors he had besides the petitioning creditor. His Honour granted an adjournment of three weeks, directing the bankrupt in the meantime to file his accounts.

HOULDER & HOULDER, Vintrol and Chemical Manufacturers.

The debtors, William and William Washington Houlder, trading in co-partnership at Paul's Wharf, Upper Thames Street, and Southall, Middlesex, filed their petition for liquidation on February 15, and Mr. Samuel Potter afterwards applied to the Court for the appointment of a receiver and manager of the estate. He stated that the total debts were 15,000*l.*, the assets being estimated at the same amount. Mr. Registrar Murray asked whether the debtors were being sued. Mr. Potter replied in the negative, but said that proceedings were

threatened. It was important that the fires used on the works should not be allowed to go out, and that the business should be sold as a going concern. His Honour asked how many creditors joined in the application. Mr. Potter said that it was supported by creditors for 6,500*l.* out of 15,000*l.* His Honour said that, subject to a supplemental affidavit being filed setting out the special circumstances of the case, and the necessity for a receiver and manager, he would grant the application. The following is a list of the principal creditors:—

Bennett & Son, Mining Lane	£ 6,700
T. F. Robinson, 7 Lotherby	5,500
The Carlton Building Society, Golden Square	1,150
E. Jennings, 49 Chancery Lane	500
H. C. Hanson, Southall	400
G. Dahm, 9 Mining Lane	240
H. Gottfield, Coleridge	162
E. Brodell, 6 Co., Upper Thames Street	150
Lane & Nesham, Lambeth	150
F. Body, Cologne	150
John Eaton, Brentford	100
S. J. Walden, Walham Green	100
Jaynes, Beasley & Co., Haling Dean	55
A. H. Neale, Colnbrook	50
T. O. Neville, Brentford	50
Slitt & Sons, Lambeth	25
Montgomery & Sons, Brentford	25
Thomas Jess, Blackheath	25
John Clark, Paul's Wharf, E.C.	20
Clark & Coote, 19 Water Lane	20
Cowper & Sons, Glasgow	20
Brain & Co., Bromley	20
H. Wigan & Co., Swan Lane, E.C.	20
Gray's Chalk Quarries Company	16
W. Northern & Co., Vauxhall Walk	16
W. & C. Larter, Kent Street, Borough	15

Druggists' Sundries.

A PHYSICIAN advised a patient "to take a walk on an empty stomach." "Whose stomach?" feebly asked the patient.

A CHIROPDIST announces on his business cards that he has "removed corns from several of the crowned heads of Europe."

A LECTURER aptly demonstrated the theory that heat generates motion by pointing to a boy who had accidentally set down on a piece of lighted punk.

AN AMERICAN HUSBAND has introduced a muclage which is labelled "The Great Stickest." Miss Lydia Thompson would probably say or rather sing of this article that "it is the stickiest stickiest that ever you did see."

A PHYSICIAN, on presenting his bill to the executor of the estate of a deceased patient, asked, "Do you wish to have my bill sworn to?" "No," replied the executor, "the death of the decedent is sufficient evidence that you attended him professionally."

DRY SYRUP is the name given to concentrated medicinal compounds in powder, which, when dissolved by the aid of heat in the proper menstruum, make the syrup of the article employed. The plan seems well adapted to almonds and similar articles, the liquid syrup of which is with difficulty kept from change in warm weather.

THE COUNT DE GRASSH was once wounded in the knee with a musket-ball. The doctors cut and hacked and made many incisions, when, getting out of all patience, the Count asked why they cut him up so much. "We are seeking," said the surgeon, "for the ball." "Why didn't you mention that before?" "I have the ball in my pocket."

AN OFFICIAL DECREE of the President of the French Republic, dated March 1, named the eminent chemist, M. Charles Joseph Sainte Claire Deville, doctor of science and member of the Institute, professor titulaire to the chair of Natural History of Inorganic Bodies of the College of France, succeeding to the well-known M. Elie de Beaumont, lately deceased.

A REPORTER of the New York drug market opens his remarks thus:—"The weather continues to furnish reasons for the limited business, this time it being the extreme cold which pervades the land, and benumbs the energies of the people. The sun is gathering power, however, and when permitted to exercise it, will no doubt make business, and business men, more limber."

METHYLATED SPIRITS.—One person, it appears from the recently issued report of the Inland Revenue Commissioners, has been detected and convicted of selling methylated spirit as a beverage. The spirit had not been purified, but only sweetened, coloured, and reduced in strength. The Commissioners state that it is difficult to understand how the taste of persons could become so depraved; the spirits were consumed by persons who were in very humble circumstances.

STYRAX IN ITCH.—At the Stuttgart Hospital they treat scabies with the following ointment:—Styrax, one ounce; olive oil and common spirits, each one drachm; mix. If an old case, the patient is first washed thoroughly with soft soap, nine to twelve times in three days, and then anointed with the above, one to three times a day. In recent cases the soft soap is not required. In 1,659 cases thus treated, every one was cured, although no precautions were taken to destroy the insects on clothing, and not one relapse occurred.

RED MARKING INK FOR CLOTHING.—A red ink for marking clothes, which is not attacked by soap, alkalis, or acids, is prepared by Welger as follows:—Enough finely-pulverised cinnabar to form a moderately thick liquid is very intimately mixed with egg-albumen previously diluted with an equal bulk of water, and beaten to a froth, and filtered through fine linen. Marks formed on cloth with this liquid by means of a quill are fixed after they have become dry by pressing the cloth on the other side with a hot iron. The ink will keep in well-closed bottles for a long time without separation of the suspended cinnabar. —*Boston Journal of Chemistry.*

The Custom House officers at Basle came across a package which puzzled them lately. It was a supply of water from the miraculous fountain of Lourdes. With infidel brutality they imposed on it the medicine duty. It certainly seems to us that the demurrers had the best of the argument. They asserted that this water was not a medicament in the ordinary sense of the word, but only water to which the mystical power of faith could give medical properties. Clearly the faith is the medicine, and the water is worthless; though we should hardly have expected such an admission from the religious exporters.

A CURIOUS bit of evidence respecting the condition of the mining population in the north is given by the *Durham Advertiser*. The other day an eminent dentist in that city received the following note from a pitman: "Lanchester, Fuly 6th. Ser, I nockt 5 teeth down my wifes throte on Saturday, and I wunt them put in again. Will you tell me wat it will cos, and she will come and see you nex weak." The question of terms having been satisfactorily settled, this business-like order was duly executed and paid for.

AT A "PERMISSIVE BILL" MEETING at Barnstable, Mr. Cave, M.P., stated that he learned from residents of Salthair that a great many of them went to Bradford to drink, because they did not wish to be seen in the public-houses close by, and that in one druggist's shop in Salthair there was as much intoxicating liquor sold as in any of the best public-houses in Shipley; that at this shop would be sold any liquor for which money was forthcoming; that on demand it would even be sold to him as a stranger, and that a commissioner (a stranger in Salthair) went to the shop and bought a bottle of whiskey.

CATTLE-POISONING.—The *Fremantle's Journal* learns that several rather severe losses of cattle have lately been sustained by occupiers of low, marshy, undrained lands in different parts of the country, from vegetable poisoning. One outbreak of the kind has been recently successfully investigated in the district of Kilbride, county Galway, by Mr. W. Chambers, Government cattle inspector. It was distinctly proved that the cause of death was the poisonous effects of *Colekicium autumnale* or meadow saffron, a plant peculiar to the lands above described. Twenty-three animals, belonging to six or seven small tenants, have succumbed to the disease, leaving one or two of the owners almost penniless.

HOUSEHOLD PESTS.—For the destruction of indoor pests hot alum water is said to be unfailing as an insecticide. It will destroy red and black ants, cockroaches, spiders, bugs, and all the crawling pests which infest our houses. Two pounds of alum dissolved into three or four quarts of boiling water; let it stand on the fire till the alum disappears; apply it with a brush, while nearly boiling hot, to every joint and crevice in closets, bedsteads, pantry-shelves, and the like. Brush the crevices in the floor of the skirting or boards, if you suspect

that they harbour vermin. If, in whitewashing a ceiling, plenty of alum is added to the lime, it will also serve to keep insects at a distance. Cockroaches will flee the paint which has been washed in alum water.

ALMOND BRAN.—In Germany (says a correspondent of the *American Druggists' Circular*) for years past, the above preparation (*Mandelkleie*) has been in use for whitening and softening the skin. As its name implies, it is the residual cake of the expression of almond oil, powdered and perfumed. Since it would be quite difficult in this country to get almond bran, I offer the following as a good substitute (a slight modification of one of Hager's formulas):—

Bethlehem oatmeal	4 pounds.
Wheat flour	1 pound.
Rub well with sweet oil of almonds	3 ounces.

This makes the imitation. Then add:—

Borax, powdered	3 "
Orisa root, powdered	5 "
Oil of lemon	4 ounces.
Nitro-benzol	20 minims.

(Commercial oil of bitter almonds).

True oil of roses 1 drop.

Mix. It is entirely harmless and serves its purposes well.



TERMS.—Announcements are inserted in this column at the rate of one halfpenny per word, on condition that name and address are added. Name and address to be paid for. Price in figures counts as one word.

If name and address are not included, one penny per word must be paid. A number will then be attached to the advertisement by the Publisher of the CHEMIST AND DRUGGIST, and all correspondence relating to it must be addressed to the "Publisher of the CHEMIST AND DRUGGIST, Colonial Buildings, Cannon Street, London, E.C.", the envelope to be endorsed also with the number. The publisher will transmit the correspondence to the advertiser, and with that his share in the transaction will cease.

FOR DISPOSAL.

Southall's Materia Medica Cabinet, 10s. 6d. 19/53.

Muter's "Chemistry," new, 12s. 6d. 37/55.

One doz. shop rounds, 32-oz. stoppered, N.M., do. W.M. B., 25 Queen Street, Ramsgate.

Lescher's 2l. 2s. Materia Medica Cabinet, new and perfect. Cash offers. Hall, 78 St. Stephen's, Norwich.

Eighteen bottles Leeming's Essence, clean, carriage paid, 20s. Fortune, Anstruther.

Erasmus Wilson's "Anatomy," 4s. 6d., published, 12s. 6d. 26/54.

"Pharmaceutical Journal" posted free day of arrival, 9s. "Specs," 4 Harbour Street, Folkestone.

"Pharmaceutical Journal," 1873, single numbers. 2d. each, free. Lea, Folkestone.

The first 29 shilling parts Maspratt's "Chemistry," quite new. Cash offer wanted. H. Coates, 25 Micklegate, York.

THE CHEMIST AND DRUGGIST for 1872, 1873, and 1874. Warwick, Chemist, Hartlepool.

Fine 1872 Hotchkiss' oil of peppermint, 23s. per lb. Green, 10 Crown Street, Halifax.

Trusses for sale (on Coles' principle), 11 double at 8s. each, 18 single at 5s. each, or 7l. 10s. for the lot. Nicholson, 115 Ossulston Street, Somers Town, London.

Lescher's "Elements," 4s. 6d.; Garrod's "Materia Medica," 6s. 6d.; all perfect. Beilby, Sutton-on-Ashfield, Mansfield.

Microscope, in good condition, price 4l. 10s., or offer; cost 6l. 6s.; also electrical machine, tincture press, B. P. 1867. J. Smith, 31 Hightown, Crewe.

Royle's "Materia Medica," and Attfield's "Chemistry," equal to new. What offers? G. A. Holt, 13 Methley Street, Kennington Cross.

Harris's "Principles and Practice of Dentistry," Austin, not at all soiled, equal to new. To be sold for less than half cost price. R. Crozier, Lytham.

Two handsome specie jars (Hawkes') 24 in. high, similar to Maw's Fig. 1 with gilt metal covers; also 2 mahogany stands for do. Andrews, Chemist, Eastbourne.

Cheap dispensing bottles, extra quality, 6-oz., flat and oval, 9s. 6d. a gross; 4-oz. and 3-oz., 8s. 6d.; a few gross 3-oz. best white phials, 9s. 6d. Andrews, Chemist, Eastbourne.

Set of B. P. volumetric apparatus, 11s. 6d.; another ditto, 8s. 6d.; boxes free. Brass scales, 18s. Apothecaries' Hall, Buxton.

"Pharmaceutical Journal" from January 1867 to July 1874. Nearly bound in yearly volumes. What offers? T. B. Jones, care of Mr. Lance, M.P.S., 207 Copenhagen Street, London, N.

Microscope, with polarising prisms (R. Field & Son, Birmingham, makers); also a large collection of objects in mahogany cabinets, cost 16l. 16s.; will be sold for 10l. Address, Hutchinson, 146 Duke Street, Leith.

Outside dental show case in perfect condition; a Gaiffe's battery, cells want replenishing, cost 42s.; ether spray apparatus (Richardson's), cost 17s. 6d.; the lot for 3l. 10s., or exchanged for a good microscope or other suitable articles. 26/50.

Twenty-five thousand good unpoisoned fly papers, price 5l., sample on receipt of stamped envelope; also "Pharmaceutical Journal" for last nine years, and THE CHEMIST AND DRUGGIST for last four years, price 20s. Robert Corner, Duplex Cottage, Somerby, Thirsk.

Substantial plate-glass mahogany wall case; large lamp, with swan-necked iron and fittings perfect; scales, jars, bottles, &c., suitable for a beginner, cheap. Also, the entire superior fittings of a chemist's shop. D. Owen & Co., 83 Rye Lane, London.

Smith's "Guide," 2s. 6d.; 2 Lescher's "Elements," 4s. 6d. each; "Pharmaceutical Latin Grammar," 3s.; Valpy's "Latin Grammar," 1s. 6d.; "Selecta & Prescriptis," 3s. 6d.; Caesar's "Commentaries," 1s. 6d. All new. A. E. Huband, 161 Broad Street, Birmingham.

Hydrostatic analytical balance weights, by Oertling, 5l.; chemical chest, 26 by 18½ by 23 inches, full of apparatus, &c., 4l.; platina crucible, dish, capsules, about 3 ozs., 30s.; Pereira's "Materia Medica," 3 vols., 30s.; "Pharmaceutical Journal," from 1847, 18 vols., bound, 9 vols. unbound, few numbers deficient. Offer? Several books, "Chemistry," "Botany." E. S., 57 Geneva Road, Brixton, London.

Muter's "Chemistry" (perfectly new), in 3 parts; strong paper cover, 10s. E. Palmer, Mercury Lane, Canterbury.

About 1 cwt. damaged arrowroot. What offers? Four pear-shaped carboys (small), 10s. 22/6d.

Three mahogany circular stands, one ebonised, for carboys and specie jars, for 20s.; gilt coronet, for specie jar, 3s. 6d.; two step stands, for window or counter, 2s. 6d. each; Maw's 25s. dispensing scales, 15s.; pint metal veterinary syringe, with extra bent pipe, in box, 5s. 6d.; tin percolator, 2s. 6d.; stone aerated water syphon, 2s.; Bird's disinfecting powder, in 3d. and 6d. packets, 12s. and 24s. per dozen. J. W. C., 1 Madeira Place, Torquay.

Wall fixtures from Messrs. Stickland & Rowe's Pharmacy, 21 feet 6 inches long, 8 feet 3 inches high to top of cornice, carved pediments above 18 inches high, with 8-day shop dial in centre, plate-glass case with two doors in centre, and shelves for shop bottles each side and one cupboard at each side, the under part fitted fifteen drawers and thirty lockers, all grained oak, price, 37l. 10s.; without clock, 35l. The above is a well-designed piece of fixture, by Treble & Son. To be viewed at 42 Gloucester Street, Hoxton, London. All communications to Mr. Rowe Chemist, Cromwell Place, South Kensington.

Oliver's "Botany," new, 3s.; Chambers' "Zoology," new, 1s. 8d.; Roscoe's "Chemistry," 2s. 6d.; Todhunter's "Euclid," 2s. 3d.; Mason's "Grammar," 1s. 9d.; Colenso's "Arithmetic," 3s.; "Cesar," 1s. 9d.; Hamilton's translated "Cesar," 4s. 6d.; Giles's translated "Cesar," 1s. 9d.; Colenso's "Algebra," 3s.; Anderson's "Geography," 1s. 9d.; Johnston's "Atlas," new, 1s. 9d.; Hiley's "European Geography and History," new, 2s. 6d.; Johnston's "British Geography," 1s.; Guy's "Arithmetic," 1s. 6d.; "Latin Primer," 1s. 9d.; Henry's "First Book," 1s.; half postage; all in good condition. B., 9 Burwood Place, Edgware Road, London.

Post free. Markham's "Heart Disease," 3s.; Hunt's "Stammering," 2s.; Buchanan's "Domestic Medicine," 2s.; "Chemist's Dictionary," 2s.; Thomas Gurnsey's "Homoeopathy," 3s. 6d.; Sampson's "On Homoeopathy," 2s.; "Celsus," 2s. 6d.; Tyndall's "Natural Philosophy," 1s. 6d.; Rees' "On Kidneys," 2s. 3d.; Filcher's "Diseases, Ear," 5s. (published 10s. 6d.); Wilson's "Skin Diseases," 4s. 6d.; Main's "Vegetable Physiology," 3s. 6d. (published 8s.); Schmidt's "On Cancer," 1s. 6d.; Meadows "On Eruptions," 2s.; Smith's "Analysis of Medical Evidence," 2s. 6d. No Carriage. Bentham's "British Flora," hundreds of wood engravings, 2 vols., new, 31s. 6d. (cost 3l. 10s.); Miller's "Chemistry," 3 thick vols., second edition, only 25s.; Gooch's "Chirurgical Works," 3 vols., scarce, 10s.; Hooper's "Medical Dictionary" and Cooper's "Surgical Dictionary" (old copies), 5s. the two. Wanted good works on Natural History. N. Davis, 161 Seven Sisters' Road, London, N.

Two 4½ feet long 8 feet high mahogany grained wall cases, with drawers, &c., under; one 6 feet high mahogany grained wall case; handsome newly-made mahogany wall case, with cupboards under, as fig. 207 Maw's catalogue; one 11½ feet long 2 feet wide handsome moulded-top counter, with mahogany carved brackets and panelled front, with drawers; two 6-feet and one 3-feet long mahogany office desks, as 225 Maw's catalogue; handsome wall fitting, similar to No. 90 Treble's catalogue; 3 plate-glass shop doors; handsome mahogany dispensing screen, with show cases at end, with carving and written plate-glass tablet over frame, as No. 136 Treble's list; 6 paper maché show bowls, all sizes, as fig. 62 Gilbert's list; one show bowl, as fig. 39 Gilbert's list; two pairs scales, as figs. 1 and 7 Maw's list; one each 1 and 2-dozen 5-grain pill machines; one 1-gallon and one 2-gallon copper measures. Lloyd Rayner, 333 Kingsland Road (nearly opposite Haggerstone Station), London, N. For other goods see miscellaneous column.

Muspratt's "Chemistry," beautifully and substantially bound, quite new, cost 70s., for 40s. or for any three of the following, which must be in good condition:—Attfeld's, Fownes, or Muter's "Chemistry," Bentley's or Balfour's "Botany." Apply, T. M., care of J. Douglas, Mr. Peebles, 8 Summerhall Square, Edinburgh.

Ten doz. N. and W. mouth pints and quarts, 5s. per doz.; 19 black stock 1-gal., gilt tin tops, 1s. each; 13 white jars—7-lbs., 4 with tin tops, 4 specie jars, 7 7-lb. blue jars; 1 pair of iron scales, 3 mortars, some strips glass shelving. 7d. 14s. wanted for the lot, but no reasonable offer refused. Clapham Junctioners are requested not to try it on again, or non-purchasers. Walker, 7 York Terrace, York Street, West Stepney, E.

WANTED.

Various upright show cases. Dolman, Cheltenham.

Mixing machine, 10 to 20 quarts. Fuller & Co., Norwich.

A lamp, with bracket, as Fig. 9 in Maw's catalogue. 17/25d.

Attfeld's "Chemistry," latest edition. 36/55.

Upright mahogany case for counter, height about 28 inches, width, 30 inches. G. Briggs, Goolse.

Continuous soda-water machine, and ice cream soda apparatus. E. V., 40 Aldersgate Street.

About three dozen N. M. white stoppered 6-oz. bottles. G. Thornhill, Hill Street, Poole.

Hassell "On Adulterations," latest edition. State price. F. C. S., 7 Coltna Street, Hull.

First-class microscope. State price and particulars to B., 136 Hanover Street, Sheffield.

Muspratt's "Chemistry," Piesse's "Perfumery," Owen's "Practice of Perfumery." 33/56.

Some marking ink (outside) or other, cheap boxes; also turned wood boxes. Leonard Sincock & Co., Nelson Street, Bristol.

A metal mortar, size 16 to 20 pints; an ice-keeping safe, large size. Offers wanted for a few gross 4-oz. empty Eau de Cologne bottles. "Alpha," 13 Whitefriargate, Hull.

"Pharmaceutical Journal" for February and March, 1875, February, 1866. Address, stating price, John William Longley, 73 North Street, Leeds.

IMITATION OF TORTOISE-SHELL.—The appearance of tortoise-shell may be given to horn by brushing it over with a paste made of two parts of lime, one part litharge, and a little soap, which is allowed to dry. This acts by forming sulphide of lead with the sulphur contained in the albumen of the horn, producing dark spots, which contrast with the brighter colour of the horn.—*Boston Journal of Chemistry.*

TEA CULTURE IN SICILY.—A serious attempt, in the success of which all Europe is more or less interested, is about being made to inaugurate the culture of the tea plant in Southern Italy. It has been noticed that the soil of Sicily resembles very much that of Japan, and the climate is also very similar. The authorities are fostering the experiments, and numerous packages of the seeds of different varieties of tea have been procured from Japan, and the experiment will be attempted on a considerable scale.



THE Board of Trade returns for February again indicate a falling off of export business as compared with the same month of 1874, but not to the same degree as we pointed out last month. This time the total amount of decrease amounts to about three-quarters of a million sterling.

The strike of chemical operatives continues in the Newcastle district, but it can hardly be said to have had any effect on prices. At present there does not seem much prospect of a settlement. The manufacturers lately offered to submit the wages question to Mr. Rupert Kettle, the men returning to work on conditions set forth by the masters. The men have expressed their willingness to accept arbitration, if they themselves have the choice of the arbitrator, and are allowed to go to work on the terms upon which they left it. The masters rejoin that they regret their offer has met with so little success, and state that it can in no way be amended.

Balsam of Tolu has reached a very high price, and cannot now be obtained at all in quantity.

Higher prices are expected for cod liver oil. In Norway the stock is said to be entirely cleared out, and the new season's supply cannot be reckoned on before May.

Manna is also quoted higher, and Russian isinglass (of fine quality) has sold at a high price.

Opium is again dearer, and there are very probable rumours that the stock of the finest quality of Turkey has been mainly bought up by one company.

English oil of peppermint is quoted dearer.

The quantity of cinchona imported suitable for quinine manufacturers is said to have been somewhat limited lately, and the price of the alkaloid has advanced. It is now firm, and it was noticeable that the chief English makers refused a large order a week ago. It may be remarked, however, that with regard to this, as in the case of most of the other light chemicals, German competition has now become sufficiently formidable to check anything like extravagant charges on the part of any would-be monopolists.

Quicksilver is still lower, being now reduced to 20*l.* a bottle, at which price some considerable business has been effected. Mercurials have all followed the decline.

Another lot of Peruvian iodine was put up at the sales lately, and 8*½*d., which was the first offer, was refused, the seller remarking that nothing less than 9*½*d. would satisfy him. The offer of an extra *½*d., however, was taken, and again the whole lot (about 25,000 ounces) was bought in one hand, with the exception of one keg, which was reserved.

Some feeble efforts have been made lately to establish coca and boldo leaves as staples on the market, but not very successfully hitherto. The few parcels of the former that have yet been sold in this country have been for export, and some boldo leaves imported from Africa in Peru, which were offered a fortnight ago, failed to find a purchaser at the stipulated price of 14*s.* per pound.

With regard to coca (*Erythroxylon coca*), we may mention here that we learn from a gentleman interested in its sale that its anticipated physiological effects are not observable if taken by itself. The natives, it seems, masticate it with lime as a stimulant, and it is said with wonderful effect. If this be true, it is very likely analogous to the effect of betel-nut in India when used with *chunam* or lime. This, as is well known, produces a kind of intoxication to beginners, the reverse of agreeable, with a most copious flow of saliva, which by habit becomes so much modified that to some extent the drug takes the place of tobacco in India. It is also said that in Peru the coca leaves are masticated with the seeds of *Chenopodium quinoa*, and serve as a stimulant to the nervous system. It may be mentioned that these leaves (*C. quinoa*) are used as spinach both in Peru and in this country.

Monthly Price Current.

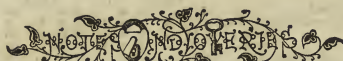
The prices quoted in the following list are those actually obtained in Minding Lane for articles sold in bulk. Our Retail Subscribers must not expect to purchase at these market prices, but they may draw from them useful conclusions respecting the prices at which articles are offered by the Wholesale Firms.

CHEMICALS.		1875.		1874.	
ACIDS.		s. d.	s. d.	s. d.	s. d.
Acetic	per lb.	6	4	0	4 3/4
Citric	"	3	11 1/2	0	0
Hydrochloric	per cwt.	5	0	7	0
Nitric	per lb.	0	5	0	5 1/2
Oxalic	"	0	6	0	5 1/2
Sulphuric	"	0	0	0	1
Tartaric crystal ..	"	1	6 1/2	1	6 1/2
powdered	"	6	0	0	0
ANTIMONY ore	per ton	250	0	270	0
crude	"	0	0	0	0
regulus	"	54	0	0	0
star	"	25	0	0	0
ARSENIC, lump	"	25	0	0	0
powder	"	14	5	0	0
BRIMSTONE, rough ..	per ton	155	0	160	0
roll	per cwt.	10	0	10	6
flour	"	11	6	12	6
LODINE, dry	per oz.	8	6	0	0
IVORY BLACKS, dry ..	per cwt.	8	6	0	0
MAGNESIA, calcined ..	per lb.	1	6	0	0
MERCURY	per bottle	400	0	0	0
MINIUM, red	per cwt.	25	0	25	6
orange	"	37	0	0	0
PRECIPITATE, red ..	per lb.	6	8	0	0
white	"	6	7	0	0
PRUSSIAN BLUE	"	0	0	0	0
SALTS.		1875.		1874.	
Alum	per ton	160	0	165	6
powder	"	177	6	180	0
Ammonia	"	0	0	0	0
Carbonate	per lb.	0	7	0	7 1/2
Hydrochlorate, crude ..	"	0	0	0	0
white	per ton	640	0	0	0
British (see Sal Am.) ..	"	0	0	0	0
Sulphate	per ton	365	0	370	0
Argol, Cape	per cwt.	90	0	99	0
Red	"	76	0	70	0
Opento, red	"	32	0	33	0
Sicily	"	60	0	63	0
Ashes (see Potash and Soda)	"	0	0	0	0
Bleaching powd.	per cwt.	10	3	10	6
Borax, crude	"	40	0	40	0
British indur	"	56	0	56	0
Calomel	per lb.	6	0	0	0
Copper	"	25	3	26	0
Coppers, green	per lb.	65	0	70	0
Corrosive Sublimate ..	per lb.	5	2	0	0
Cr. Tartar, French, p.c.	113	0	114	0	0
brown	"	22	0	26	0
Epsom Salts	per cwt.	6	0	6	0
Glauber Salts	"	6	0	6	0
Lime	"	13	0	21	0
Magnesia: Carbonate ..	"	42	6	45	0
Potash	"	0	6 1/2	0	0
Bichromate	per lb.	0	6 1/2	0	0
Carbonate	"	0	0	0	0
Potashes, Canada, 1st	sort	35	6	0	0
Pearlshells, Canada, 1st	sort	37	6	0	0
Chlorate	per lb.	0	10	0	10 1/2
Prussiate	"	1	13	0	0
red	"	3	2	3	2
Tartrate (see Argol and Cream of Tartar)	"	0	0	0	0
Potassium	"	7	0	0	0
Iodide	per lb.	11	0	11	6
Quinine	"	0	0	0	0
Sulphate, British, in	bottles	6	8	6	9
Sulphate, French	"	6	7	0	0
Sal Acetos	per lb.	0	9	0	10
Sal Ammoniac, Brit. cwt.	44	0	0	45	0
Saltpetre	"	0	0	0	0
Bengal, 60 cent. or	under	19	0	20	6
Bengal, over 60 cent.	per cwt.	17	6	18	9
British, refined	"	24	0	25	0
Soda: Bicarbonate, p.cwt.	14	0	14	6	0
Carbonate	"	0	24	0	0
Soda Ash	per deg.	0	24	0	0
Soda Crystals	per cwt.	95	0	0	0
Hyposulphite, per cwt.	13	0	13	0	0
Nitrate	per cwt.	13	0	12	6
SUGAR OF LEAD, White, cwt.	42	0	44	0	0
SUGAR OF LEAD, Brown, cwt.	32	0	33	0	0
SULPHUR (see Brimstone)	"	0	0	0	0

DRUGS.

		1875.		1874.	
		s. d.	s. d.	s. d.	s. d.
VERMOREL	per lb.	1	1	1	5
VERMILION, English ..	"	5	2	0	0
China	"	0	0	0	0
DRUGS.		1875.		1874.	
ALOES, Hepatic	per cwt.	60	0	180	0
Socotrine	"	100	0	200	0
Cape, good	"	29	0	38	0
Infusory	"	29	0	35	0
Barbados	"	40	0	185	0
AMBERGHS, grey	oz.	70	0	90	0
BALSAM.		1875.		1874.	
Canada	per lb.	1	9	2	0
Capivi	"	2	10	3	0
Peru	"	6	0	6	6
Tolu	"	5	9	6	0
BARKS.		1875.		1874.	
Canela alba	per cwt.	16	0	27	0
Oscavilla	"	19	0	21	0
Peru, crown & grey ..	per lb.	0	9	2	0
Calisaya, flat	"	3	0	3	6
" quill	"	3	0	4	2
Carthagen	"	0	6	1	8
China	"	0	1	0	4
Playto	"	0	4	2	0
Red	"	1	0	4	0
Buchu Leaf	"	3	0	5	0
CAMPBELL, China	per cwt.	74	0	75	0
Japan	"	77	6	0	0
Refin. Eng. per lb.	"	1	14	0	0
CANTHARIDES.		1875.		1874.	
CHAMOMILE FLOWERS ..	per lb.	35	0	50	0
CANTHARID	"	6	0	24	0
DRAGON'S BLOOD, Ip. ..	"	100	0	300	0
FRUITS AND SEEDS (see Seeds and Syops).		1875.		1874.	
Anise, China Star per cwt.	110	0	115	0	155
Spanish, sc.	"	30	0	35	0
Beans, Tonquin	per lb.	1	11	3	0
Cardamom, Malabar ..	"	3	6	5	0
inferior	"	2	0	3	5
Madras	"	2	0	3	0
Ceylon	"	5	8	5	10
Cassia Fistula	per cwt.	14	0	15	0
Castor Seeds	"	7	0	11	6
Cocculus Indicus	"	14	0	16	0
Colechynth, apple	per lb.	0	11	1	0
Croton Seeds	per cwt.	44	0	0	0
Cubeb	"	21	0	23	0
Cumin	"	18	0	20	0
Dividivi	"	11	0	15	0
Pengree	"	8	0	16	0
Guinea	"	25	0	26	0
Juniper Berries	"	9	0	10	6
Nux Vomica	"	7	6	13	0
Tamarind, East India ..	"	18	0	20	0
West India	"	10	0	12	0
Vanilla, large	per lb.	60	0	79	0
inferior	"	60	0	89	0
Warmseed	per cwt.	40	0	56	0
GINGER, Preserved, per lb.	0	6 1/2	0	10	0
HONEY, Chili	per cwt.	44	0	62	0
Jamaica	"	48	0	58	6
Antan	"	40	0	56	0
IPERCACUANHA	per lb.	4	0	4	8
ISINGLASS, Brazil	"	3	0	5	0
Tongue sort	"	3	0	5	0
East India	"	1	0	5	3
West India	"	4	6	4	10
Russ, long staple ..	"	13	0	16	0
inferior	"	0	0	4	0
Simovia	"	3	0	4	0
JALAP, good	"	0	9	0	10
infer. & stems	"	0	9	0	8 1/2
LEMUR, JUICE	per degree	1	10	0	0
LIME JUICE	per gall.	1	0	2	0
LIGUORICE, Spanish per cwt.	40	0	70	0	40
Liquorice Root	"	11	6	16	0
MANNA, Italy	per lb.	6	5	6	0
small	"	1	6	1	9
MUSK, Pod	per oz.	22	0	45	0
Castor	"	46	0	60	0
OILS (see also separate list).		1875.		1874.	
Almond, expressed per lb.	1	1	1	0	0
Castor, 1st pale	"	0	44	0	5
second	"	0	32	0	0
infer. & dark	"	0	32	0	0
Cod Liver	per gall.	5	6	7	9
Croton	per oz.	0	3	0	4
Castor Oil	"	0	0	0	0
Almond	per lb.	22	0	0	0
Almond-seed	"	8	74	0	0
Bay	per cwt.	0	0	0	0
Bergamot	per lb.	10	0	25	0
Cajeput	per bottle	2	4	2	8
Caraway	per lb.	5	3	6	0
Cinnamon	per oz.	1	0	8	10
Cinnamon-leaf	"	0	0	3	0
Citron	"	0	0	0	15
Clove	per lb.	10	0	0	0
Juniper	"	1	10	2	0
Lavender	per lb.	1	10	0	5
Lemon	"	7	9	11	6

1875.				1874.				1875.				1874.			
Essential Oils, continued—				Oils, continued—				WHALES, South Sea, per ton				WHALES, South Sea, per ton			
Lemongrass	0 33	0 33	0 33	0 21	0 21	0 21	0 21	to	to	to	to	to	to	to	to
Neroli	0 4	0 4	0 4	0 6	0 6	0 6	0 6	Yellow	28 10	34 0	32 10	32 10	32 10	32 10	32 10
Nutmeg	0 72	0 8	0 8	0 8	0 8	0 8	0 8	Brown	26 0	28 0	30 0	30 0	30 0	31 0	31 0
Orange	0 72	0 8	0 8	0 8	0 8	0 8	0 8	East India, Fish	22 15	23 0	27 0	27 0	27 0	27 0	27 0
Oil of Rose	13 0	25 0	25 0	13 0	22 0	22 0	22 0	OLIVE, Galipoli	0 0	0 0	48 5	48 5	48 5	48 5	48 5
Patchouli	2 9	4 0	4 0	3 6	4 0	4 0	4 0	Trieste	42 10	0 0	45 0	45 0	45 0	45 0	45 0
Peppermint	22 0	24 0	24 0	20 0	21 0	21 0	21 0	Levant	40 0	0 0	41 0	41 0	41 0	41 0	41 0
American	32 0	36 0	36 0	30 0	34 0	34 0	34 0	Majador	40 0	0 0	40 0	40 0	40 0	40 0	40 0
English	1 4	1 10	1 10	1 4	1 10	1 10	1 10	Spanish	42 0	0 0	42 0	42 0	42 0	42 0	42 0
Rosemary	2 3	2 6	2 6	2 4	2 6	2 6	2 6	Sicily	43 0	0 0	42 0	42 0	42 0	42 0	42 0
Sassafras	12 0	15 0	15 0	11 0	12 0	12 0	12 0	COCONUT, Cochiti	43 15	44 0	39 10	39 10	39 10	39 10	39 10
Spearmint	1 9	2 0	2 0	2 0	2 2	2 2	2 2	Ceylon	35 15	38 0	35 10	35 10	35 10	35 10	35 10
Thyme	0 3	0 3	0 3	0 3	0 3	0 3	0 3	Sydney	37 0	38 0	31 0	31 0	31 0	31 0	31 0
Mac, expressed	38 0	41 0	41 0	26 0	28 0	28 0	28 0	GROUND NUT AND GINGELLY	0 0	0 0	0 0	0 0	0 0	0 0	0 0
OPUM, Turkey	38 0	41 0	41 0	26 0	28 0	28 0	28 0	Romby	0 0	0 0	0 0	0 0	0 0	0 0	0 0
inferior	0 0	0 0	0 0	70 0	110 0	110 0	110 0	Madras	34 0	35 0	35 0	35 0	35 0	35 0	35 0
QUASSIA (bitter wood) per ton	0 0	0 0	0 0	70 0	110 0	110 0	110 0	PALM, fine	34 10	35 0	35 0	35 0	35 0	35 0	35 0
RUBARB, China, good and	1 11	5 9	5 9	3 0	4 6	4 6	4 6	LANSIED	25 5	25 10	29 10	29 10	29 10	29 10	29 10
fine	0 3	1 6	1 6	0 6	2 6	2 6	2 6	RAPSEED, English, pale	32 0	0 0	34 0	34 0	34 0	34 5	34 5
Good, mild, to ord	0 0	0 0	0 0	0 0	0 0	0 0	0 0	brown	33 0	0 0	32 0	32 0	32 0	32 0	32 0
Dutch trimmed	0 0	0 0	0 0	0 0	0 0	0 0	0 0	Foreign, pale	30 10	34 0	34 0	35 10	35 10	35 10	35 10
Russian	0 0	0 0	0 0	0 0	0 0	0 0	0 0	brown	0 0	0 0	0 0	0 0	0 0	0 0	0 0
ROSE, Calabaria, per cwt.	17 0	23 0	23 0	18 0	24 0	24 0	24 0	COTTONSEED	26 0	0 0	26 5	26 10	26 10	26 10	26 10
China	18 0	20 0	20 0	18 0	24 0	24 0	24 0	LARD	70 0	0 0	48 0	50 0	50 0	50 0	50 0
Galangal	18 0	22 0	22 0	20 0	25 0	25 0	25 0	TALLOW	22 0	28 0	27 0	34 0	34 0	34 0	34 0
Gentian	17 0	19 0	19 0	17 0	20 0	20 0	20 0	TUPENTINE, American, cks	25 3	26 6	33 6	33 6	33 6	33 6	33 6
Hibiscus	30 0	33 0	33 0	30 0	33 0	33 0	33 0	Foreign	26 0	0 0	26 0	26 0	26 0	26 0	26 0
Orris	30 0	30 0	30 0	36 0	30 0	30 0	30 0	PETROLEUM, Crude	0 0	0 0	0 0	0 0	0 0	0 0	0 0
Pellitory	38 0	39 0	39 0	38 0	39 0	39 0	39 0	refined, per gall	0 102	0 11	1 04	1 04	1 04	1 04	1 04
Phk	1 0	1 3	1 3	1 0	1 3	1 3	1 3	Spirit	0 24	0 0	0 9	0 9	0 9	0 9	0 9
Rhazany	0 4	1 0	1 0	0 6	1 6	1 6	1 6	SEEDS.							
Soneka	4 0	4 10	4 10	4 0	5 0	5 0	5 0	CANARY	160 0	0 0	60 0	68 0	68 0	68 0	68 0
Snake	1 0	1 9	1 9	1 0	1 9	1 9	1 9	CARAWAY, English per cwt.	0 0	0 0	39 0	44 0	44 0	44 0	44 0
SAPPHON, Spanish	1 3	1 11	1 11	1 3	1 7	1 7	1 7	German, cks	18 0	29 0	26 0	36 0	36 0	36 0	36 0
SALEP	170 0	200 0	200 0	170 0	200 0	200 0	200 0	CORIANDE	8 0	18 0	8 0	16 0	16 0	16 0	16 0
SARSAPARILLA, Lima per lb.	0 54	0 7	0 7	0 6	0 9	0 9	0 9	HEMP	0 0	0 0	40 0	44 0	44 0	44 0	44 0
Para	0 0	0 0	0 0	1 0	1 3	1 3	1 3	LINSEED, English per qr.	56 0	57 0	58 0	61 0	61 0	61 0	61 0
Honduras	1 3	1 11	1 11	1 3	1 7	1 7	1 7	Black Sea & Azof	55 0	56 0	58 0	59 0	59 0	59 0	59 0
Jamaica	1 10	2 9	2 9	1 6	2 3	2 3	2 3	Calcutta	59 0	60 0	62 0	63 0	63 0	63 0	63 0
SASSAPRAS	13 0	14 0	14 0	14 0	17 0	17 0	17 0	Bombay	60 0	61 0	63 0	63 0	63 0	63 0	63 0
SCAMMONT, Virgin	25 0	36 0	36 0	25 0	30 0	30 0	30 0	St. Petersburg	54 0	56 0	56 0	59 0	59 0	59 0	59 0
second & ordinary	0 1	0 4	0 4	0 1	0 5	0 5	0 5	Mustard, brown, per bush	0 0	0 0	10 0	10 0	10 0	10 0	10 0
SENA, Bombay	0 1	0 8	0 8	0 1	0 10	0 10	0 10	white	8 0	12 0	8 10	11 0	11 0	11 0	11 0
Tinnivelly	0 4	1 3	1 3	0 4	1 5	1 5	1 5	POPPY, East India, per qr.	52 0	0 0	65 6	66 0	66 0	66 0	66 0
Alexandria	1 1	1 0	1 0	1 1	1 0	1 0	1 0	SPICES.							
SPERMACEUT, refined	1 1	0 0	0 0	1 0	0 0	0 0	0 0	CASSIA LIGNEA	57 0	75 0	70 0	82 0	82 0	82 0	82 0
American	0 13	0 32	0 32	0 1	0 2	0 2	0 2	Vera	24 0	50 0	30 0	61 0	61 0	61 0	61 0
SQUILLS	0 13	0 32	0 32	0 1	0 2	0 2	0 2	Buds	120 0	122 6	115 0	117 6	117 6	117 6	117 6
								CINXAMON, Ceylon							
								1st quality	2 9	4 3	2 0	4 3	4 3	4 3	4 3
								2nd do	2 0	3 3	1 8	3 5	3 5	3 5	3 5
								3rd do	1 8	2 10	1 6	3 0	3 0	3 0	3 0
								Tellicherry	3 0	3 5	0 0	0 0	0 0	0 0	0 0
								CLOVES, Penang	2 1	2 1 1/2	2 3	2 4	2 4	2 4	2 4
								Amboy	1 8	1 9	1 5	1 6	1 6	1 6	1 6
								Zanzibar	1 6	1 6 1/2	1 1	1 6 1/2	1 6 1/2	1 6 1/2	1 6 1/2
								GINGER, Jam, fine per cwt.	105 0	200 0	110 0	250 0	250 0	250 0	250 0
								Orl. to good	75 0	100 0	66 0	100 0	100 0	100 0	100 0
								African	58 0	64 0	63 0	64 0	64 0	64 0	64 0
								Bengal	48 0	55 0	33 0	0 0	0 0	0 0	0 0
								Malabar	50 0	0 0	50 0	0 0	0 0	0 0	0 0
								Cochin	79 0	127 6	70 0	120 0	120 0	120 0	120 0
								PEPPER, Blk, Malabar, per lb.	0 63	0 7 1/2	0 6 8	50 8	50 8	50 8	50 8
								Singapore	0 64	0 0	0 73	0 0	0 0	0 0	0 0
								White Tellicherry	0 11	1 6	2 0	0 0	0 0	0 0	0 0
								Cayenne	1 6	3 1	1 6	2 1	2 1	2 1	2 1
								MACS, 1st quality	3 0	3 7	3 6	4 6	4 6	4 6	4 6
								2nd and inferior	1 7	2 11	2 11	3 3	3 3	3 3	3 3
								NUTMEGS, 78 to 60 lb.	3 3	4 4	3 4	4 7	4 7	4 7	4 7
								90 to 80	2 9	3 6	3 1	3 3	3 3	3 3	3 3
								132 to 95	2 11	3 3	2 6	3 3	3 3	3 3	3 3
								PIMENTA	0 3	0 3 1/2	0 22	0 3	0 3	0 3	0 3
VARIOUS PRODUCTS				VARIOUS PRODUCTS				VARIOUS PRODUCTS				VARIOUS PRODUCTS			
COCHIN—				COCHIN—				COCHIN—				COCHIN—			
Honduras, black				Honduras, black				Honduras, black				Honduras, black			
Silver				Silver				Silver				Silver			
paste				paste				paste				paste			
Mexican, black				Mexican, black				Mexican, black				Mexican, black			
Cutch				Cutch				Cutch				Cutch			
Tenerife, black				Tenerife, black				Tenerife, black				Tenerife, black			
Silver				Silver				Silver				Silver			
SOAP, Castile				SOAP, Castile				SOAP, Castile				SOAP, Castile			
SPONGE, Turk, fin, pkd, per lb.				SPONGE, Turk, fin, pkd, per lb.				SPONGE, Turk, fin, pkd, per lb.				SPONGE, Turk, fin, pkd, per lb.			
Fair to good				Fair to good				Fair to good				Fair to good			
Ordinary				Ordinary				Ordinary				Ordinary			
Bahama				Bahama				Bahama				Bahama			
TERRA JAPONICA				TERRA JAPONICA				TERRA JAPONICA				TERRA JAPONICA			
Gambier				Gambier				Gambier				Gambier			
Tree cubes				Tree cubes				Tree cubes				Tree cubes			
Cutch				Cutch				Cutch				Cutch			
WOOD, DYE, Bar				WOOD, DYE, Bar				WOOD, DYE, Bar				WOOD, DYE, Bar			
Brazil, Branch				Brazil, Branch				Brazil, Branch				Brazil, Branch			
Log															



W. J. B.—The Society of Apothecaries requires that a candidate should have passed a Preliminary Examination in Arts, should have attended a recognised medical school, for three winter sessions and two summer sessions, and should have been apprenticed to a qualified practitioner for five years. This period may include the time spent in study. Write to the secretary for fuller particulars.

M. D.—*To Bleach Sponges.*—First soak them in very dilute hydrochloric acid in order to dissolve out the calcareous matter. Then wash thoroughly in cold water and immerse in a weak solution of chlorine. Finally, wash again in cold water, and dry. An acid solution of hyposulphite of soda (6 parts to 100 parts of water) may be substituted for the chlorine.

F. G. P.—The publication of your note would be out of place. If you write to the Registrar he will tell you if the dealer you refer to is on the Register. If he is, neither he nor you nor anyone else can prevent him selling drugs at what price he likes.

Prescriber requires a good reliable book explaining the nature and symptoms of disease generally, and indicating suitable remedies. We frequently receive a similar inquiry. Last month we ventured to recommend Dr. Aitken's "Outlines of the Science and Practice of Medicine," published by C. Griffin & Co., London, price 12s. 6d. We should be much obliged to readers who have had practical experience if they would favour us with their opinions.

H. G.—*Chlorodyne.*—The subjoined formula is given in "Squire's Compendium," and has been represented to the author as the composition of the popular medicine called chlorodyne:—

Chloroform, 4 ozs.
Ether, 1 oz.
Rect. Spirit, 4 ozs.
Treacle, 4 ozs.
Ext. Liquorice, 2½ ozs.
Mur. Morphia, 8 grs.
Oil Peppermint, 16 minims.
Syrup, 17½ ozs.
Prussic Acid (2 per cent.), 2 ozs.

Dissolve the morphia and the peppermint in the rectified spirit; mix the chloroform and ether with this solution; dissolve the ext. liquorice in the syrup and add the treacle; shake all together and add the Prussic acid.

J. C. N.—New editions of nearly all the standard works on Materia Medica have been published since the issue of the Pharmacopœia Appendix, and in each the new substances or preparations are described. "Pasma" is a healing powder prepared by Messrs. Curtis & Co. You will find it advertised in our pages.

Chemist.—You will find two formulas for Pharos's Serpents' eggs in THE CHEMIST AND DRUGGIST for 1872. Our space will not permit us to reprint that process at present.

M. S.—Professor Williams recommends for scab in sheep the application of sulphur of calcium, made as follows:—2 lbs. of sulphur, 1 lb. of quicklime, and 16 lbs. of water, boiled together and continually stirred until the ingredients are combined. He thinks from experience in horse mange that a decoction of staves acre (4 ozs. to the pint) would also prove effectual; but he strongly deprecates greasy ointments, oil of tar, or mercurials.

W. A. E.—There is no official formula for *syrr. ferr. bromidi*, but "Squire" says each fluid drachm should contain 41 grains of bromide: dose, 20 to 60 minims in water.

Jahn.—A general formula for fruit syrups "that will not ferment," made from the fruits themselves, was given in our December number. Fruit syrups are also made from the artificial essences by adding the latter to simple syrup. Thus, 2 drachms of essence of raspberry mixed with a pint of simple syrup makes the artificial raspberry syrup. Strawberry syrup is made in the same proportion; but 30 or 40 drops of the essence is sufficient in the cases of pine apple or Jargonnelle pear. Having prepared your syrup, you add about an ounce to a bottle of aerated water or plain water, or what you like, and you have your beverage. Of course the mixture can be bottled like lemonade if desirable.

R. D. wants formulae for "Aerated Ginger Ale," an aromatic winter beverage, and also for an aerated aperient for a morning drink, palatable and efficacious. We presume our correspondent wants something different to the ordinary ginger-beer in the one case, and say seltzer water in the other. We should think a little extra ginger might adapt the former to winter consumption, and a dash of sulphate of potash would effect the desired object in the latter case. Perhaps some practical reader can give us something novel.

Questioner.—We should recommend to you Roscoe and Jones' "Junior Course of Practical Chemistry," published by Macmillan. We are not quite sure about the price, but it is not more than 5s.

Quinine.—Your quinine wine would not require a patent medicine stamp but as it does not profess to be prepared in accordance with the Pharmacopœia, the retailer would need to have a sweet wine license.

Mr. A. J. Appleton, Attercliffe, Sheffield, sends us a few amusing specimens of local pharmaceutical nomenclature. The names are exact copies of orders received by himself, with the probable interpretations thereof:—

Conservative Roses
Bold Harmony
Cast Iron Sops
Brick Fat
Linctified Naphtha
Vigorous Turpentine
Sweet Nighter
Barra of Hunny
Stinch of Rhubarb

Conf. Roso
Bole Armenia
Sapo Castil
?
Naphtha Rect.
Teroh. Venet.
Syr. Zeb. Nit.
Mel. Boracic
Tincture of Rhubarb

These indicate how names get corrupted by general use.

We have ourselves reason to know that many chemists are in the habit of sticking their address labels on post cards, but it has not previously occurred to us to draw attention in this column to the law on the subject. Mr. Towie, of Manchester, however, asks us to do so. We say:—I am frequently having to pay 1d., or return them, in consequence of address labels being attached to the back. It is legal to stamp the card, but not to attach any label to it."

German Cherry Juice.—Mr. Adolph W. Miller, of Philadelphia, writes:—"I notice in the January number of your journal a reference to my article on German Cherry Juice, which was published in the March number of the *American Journal of Pharmacy*, 1873. I am surprised that there is a difficulty in obtaining the article in England, as it is so plentiful here, being used by almost all the compounders of liquors and cordials. The formulas which you give by the English, French, German and American methods will all produce various kinds of cherry brandy, but none of these will answer as a substitute in my recipe for German cherry juice. The latter article contains only from 12 to 15 per cent. of spirit, and no spice or other foreign matter of any kind. I thought it best to make the above explanation, in order to avoid disappointment on the part of those experimenting with the formulas published for cherry juice."

Mr. G. Storey, Bourne, asks:—"Will some gentleman, who has recently obtained a certificate as qualified dispenser, granted by the Society of Apothecaries, kindly inform me the extent of knowledge required in the different subjects, as the synopsis issued by the secretary, and in the 'Medical Directory' is very vague and indefinite."

J. T.—Professor Williams' works on "Veterinary Surgery" and "Veterinary Medicine" are published by MacLachlan and Stewart, of Edinburgh, and by Hardwicke, London, at, we believe, 30s. each.

S. W.—Tome's "Manual of Dental Surgery" (Churchill), price 14s.

Respecting that Gallen's Ointment, which was answered so abundantly last month, we have also to acknowledge the receipt of two similar replies from America—one from "Llac," New York, and another from "Tar Backs," North Carolina.

We have also to thank Mr. P. H. Smith, of Covington, Kentucky, for a copy of the new law in that state regulating the sale of medicines and poisons.

Kin.—"The colour-test" given in the B. P. for cod liver oil is Pettenkofer's. It indicates the presence of the bile acids, and therefore only proves that the oil has been produced from livers. There is no reliable proof that it has been obtained from *cod's* livers.—Stowe's "Toxicological Chart" is what you want. It is published by Churchill, price 2s., or mounted on rollers, 5s.

W. J.—The weights and measures of the metric system are given in the British Pharmacopœia. By a careful study of these for a few minutes, the system will appear as clearly as daylight, and no further preparation in that respect will be required for the Great Tower Street, London.

J. P.—The *Public Ledger* published daily in Great Tower Street, London.

Dispenser.—We do not know "Kirby's" process for coating pills; but its success consists no doubt in the appliances which can be adapted to large quantities. Mr. Whitfield's process (see C. & D., June, 1874) is perhaps as good as any extemporaneous method of the kind you want. It consists in making the pills as hard as possible; moistening them with a solution of 1 or 2 drachms of resin and 1 drachm of turpentine in an ounce of absolute alcohol, then agitating them briskly in a gallipot containing some powdered French chalk, and afterwards in a clean gallipot to polish them.

Trickster Solosa wishes to know how to prevent the thickening of the hair without using a strong depilatory. We must have the prescription of a preparation to some reader, if any will oblige; but the result might not be accelerated, if the sufferer from thick hair would take insufficient nourishment and no exercise, and secure by some means mental anxiety and worry. The truth is that the hair is that portion of us least under our control, at least we cannot interfere with its natural development without risk both to our health and beauty.

S. P.—Several formulae for composition powder were given in THE CHEMIST AND DRUGGIST for November, 1873. One of them was, 1 lb. of powdered bayberry, 1 lb. of powdered hemlock (sometimes omitted on account of its astringency), 1 lb. of powdered ginger, 2 ozs. powdered cloves, 2 ozs. cayenne pepper. Dose a teaspoonful in a tawny tea-thirds filled with boiling water. The essence or "Indian brandy" sold with this consists of equal parts of spirit of nitre and tincture of rhubarb with a little simple syrup (THE CHEMIST AND DRUGGIST, February, 1874). Egg powder was explained by us in this column, May, 1874.